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RICKETS

A BRIEF SUMMARY, WITH REFLECTIONS *

HENRY J. GERSTENBERGER, M.D.
CLEVELAND

The course followed by the ship of pediatrics is changing. In many schools of medicine pediatrics now ranks with internal medicine, surgery and obstetrics as a major subject of instruction; in other words, it is no longer a so-called minor specialty.

The fact that pediatrics is receiving more and more consideration in the curriculum of the schools of medicine indicates clearly that its progress and importance are being appreciated and utilized. And the marked and rapid increase in the number of men devoting themselves to this field also shows that the public appreciates the value and need of pediatrics.

Physicians trained in pediatrics today are general practitioners of the best type, rather than specialists in the narrow sense, as they formerly were. In addition to caring for the physical ills of infants and children, the pediatrician of today is also concerned with the proper training of the child and with the prevention of disease. No field in medicine offers greater opportunities for the useful and effective application of preventive medicine, a statement today accepted as sound both by the public and by the government, whether it be local, state or federal.

But the question of the present and future responsibilities and opportunities of pediatrics has been so recently and so admirably discussed by former chairmen of this section, among them Veeder, Helmholz and Huenekens, that there is no need of my proceeding further in this direction. Therefore, I have chosen another topic for the subject of my address, namely, rickets, whose consideration, however brief, I hope will be of interest and of value.

Since Kurt Huldschinsky brought forth his fundamental and epoch-making proof of the antirachitic effectiveness of the ultraviolet rays, much has been added to our knowledge of this disorder during the last eight years by the work of many men, such as McCollum, A. F. Hess, Howland, Shipley, Park, Kramer, Czerny, Moro, Freudenberg, György, Adam, Mellenby and Findlay. And yet, in many respects, rickets is still a mystery. Nevertheless, in my opinion, sufficient progress has been made to make its prevention more intelligent and effective than it heretofore has been.

It would be ideal from the standpoint of the most intelligent prevention of rickets to be in possession of all the essential facts concerning its etiology, pathogenesis and symptomatology. Fortunately, however, experience has taught us that much can be accomplished in the prevention of a disease or disorder without such intensive and inclusive information, a fact which applies also to rickets. While intensive students of this disease today may be unable to answer the question, "What is human infantile rickets?" the most important etiologic factor is known: the inadequate exposure to sunlight.

It is common knowledge that cod liver oil is the century old cure for this disease, and that both naturally and artificially produced actinic rays are very effective curative agents. Huldschinsky has recently suggested that the band of ultraviolet rays ranging in length from 320 to 289 millimicrons, which is most effective in the cure of rickets, be labeled ultraviolet B in contradistinction to ultraviolet A, which represents the ultraviolet rays above 320, and ultraviolet C, which represents those under 289.

The term rickets was at first applied to the clinical picture arising from the changes in the gross architecture and form of the bones. With the development of microscopic anatomy a definite standard of changes was recognized as being characteristic of rickets, and their detection was demanded by Virchow and later by Schmorl before the gross pathologic changes found could be accepted as being rachitic in nature. These microscopic changes mainly were the lack of calcification and the increase in osteoid tissue. When it was discovered, as the result of studies made by Schabad, E. Schloss and others of the mineral metabolism of rachitic infants, that in these cases the calcium and phosphorus retention was negative, rickets was accepted to be basically a disturbance of the calcium and phosphorus metabolism. Further substantiation of a pathologic change in the mineral metabolism was obtained by Howland, A. F. Hess, and their co-workers and others, by their quantitative studies of these minerals in the blood serum. However, many of the older clinicians, especially Heubner and Czerny, have maintained that rickets is a general metabolic disorder which affects the body as a whole but which shows the clinically recognizable results of its activity principally in the osseous system and, with Wieland, in that part of the osseous system which is growing most rapidly at the given time. In seeming confirmation of this idea might be used the relatively recent observations made by various workers, such as McClure and Chancellor, Freudenberg and György, A. Adam and König and Lenart, which indicate the presence of a pathologic disturbance of the carbohydrate metabolism in rickets. These authors demonstrated in rachitic infants an increase in the amount of diastase in the urine and feces and a decrease of the glycolytic power and the lactic acid level of the blood serum, and a seeming defect in blood-sugar level regulation. However, instead of

* Chairman's address, read before the Section on Diseases of Children at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

these observations being indicative of a primary disturbance in the carbohydrate metabolism, they well may be the results of the low phosphate level existing in the blood and probably in the tissues as well.

Freudenberg, who with György maintains that the metabolism in rickets tends toward acidosis, probably best gives the present logical course for rickets investigation when he suggests that the question to be answered is not "Why does the rachitic bone remain uncalcified?" but rather "How does the hypophosphatemia develop under the influence of a deficiency in light and vitamins?" While he and György consider the general metabolic disorder, acidotic in type, as the primary stage in the pathogenesis of rickets, Adam believes that rickets fundamentally is a growth disorder. Howland maintained, in contradistinction to Findlay, that it was the abnormal phosphorus metabolism rather than the abnormal calcium metabolism which was important in the pathogenesis of rickets, and concluded that the deficit developed over the route of inadequate absorption from the intestinal tract.

A disturbance in the glands of internal secretion also has been regarded as being the first step in the pathogenesis of rickets. Stoeltzner many years ago maintained that the suprarenals were primarily concerned, and recently Vollmer and others have tried to involve other glands of internal secretion, as well. Bosanyi maintains that a hypofunction of the bone marrow represents the primary stage in rickets, and others have indicated that the disease occurs as the result of a disturbance of the vegetative nervous system. Robison believes that an enzyme secreted in the region of the osteoblasts and hypertrophic cartilage cells is concerned in ossification, and when hindered in its action is primarily responsible for the lack of calcification observed in rickets. Shipley, Kramer and Howland, however, found that rachitic bones will calcify in vitro in satisfactory calcium-phosphate solution of a p_H much lower than the one considered necessary by Robison, and therefore do not accept Robison's conclusion.

While it is evident from these data that our knowledge of pathlogic conditions existing in rachitic infants has been increased, our conception of the pathogenesis of rickets has not been simplified.

From the standpoint of the etiology of rickets, our present status may be described as follows:

Rickets will not develop in a human infant unless the infant grows; consequently, growth is a conditio sine qua non for the production of the clinical picture called rickets. However, it is a natural physiologic function for the normal infant to grow, and therefore growth cannot be the primary cause of any pathologic condition; hence there must be another primary factor.

As many authors, especially McCollum and his co-workers, have produced rickets in rats by disturbing too much the quantitative relationship of calcium and phosphorus in the diet, and as it is known that rickets appears in a much severer form in infants fed with cow's milk than it does in those fed with human milk, it would seem plausible to look to a faulty diet as the primary cause of rickets in the human infant. The diet of the human infant, however, cannot be the primary cause of the rachitic pathologic disturbance, as it is in the altered diets of rats, because human milk or cow's milk forms all or most of the infant's diet during the time rickets usually develops and because both milks contain enough of both calcium and phosphorus and in a proportion that is satisfactory. As a result, primary low calcium rickets, in my experience, does not occur in human infants, and the low phosphorus rickets which is the typical primary form in human infants must be due to some other cause than the diet. Another fact which strongly points in the same direction is that a severer form of low phosphorus rickets develops in infants fed cow's milk than in those fed human milk, though the former contains much more phosphorus.

But why does the human infant develop a less severe rickets when he is fed human milk than he does when his diet consists of some form of cow's milk? Is it because human milk contains the antirachitic factor and cow's milk does not, or is it because human milk is nature's food for the human infant and, being chemically and physically constituted as it is, represents less of a metabolic load than does cow's milk?

The antirachitic value of cow's milk, if existent at all, is too small to be of any significance so far as its effect on human rickets is concerned. And likewise the antirachitic factor content of human milk, surely during the darker half of the year at least, is negligible. I was not able to demonstrate its presence in milk obtained from wetnurses who received one tablespoonful of cod liver oil daily, even though this milk was fed for periods of thirty-three, thirty-six and forty-five days, and a search continued for evidence of its effect for fifty-one, sixty-three and sixty-eight days, respectively, in three cases of active nonhealing human rickets; and A. F. Hess found that human milk did not contain any curative powers when given to rachitic rats, unless the human mother was liberally exposed to the rays of the quartz mercury lamp. Hartman and I have found such human milk effective in bringing on a healing process in two active nonhealing cases of human rickets after intervals of thirty-two and twenty-two days of feeding, although the healing process was less advanced at the end of sixty days than that observed when such cases were treated with the customary antirachitic measures. When it is realized that the intensity of the actinic rays produced by the quartz mercury lamp is thirty times greater than that of sunlight, and that for at least the great bulk of human mothers the exposure to the sun's rays as far as skin area and the time of exposure are concerned comparatively will be much smaller even in the summer time, it is clear that until more data are at hand enthusiasm as to the antirachitic factor content of human milk as it is ordinarily produced is not advisable.

It is most probable, therefore, that the human infant develops rachitis less severely when fed human milk than when his diet consists of cow's milk because of the peculiar chemical and physical constitution of human milk, which must be considered physiologic for the human infant.

These observations strongly suggest that in human infants vitamins do not play a primary rôle in the development of rickets. If they did, human milk, which is the sole food for infants at a time of their existence when rickets is most likely to develop—from the third to the sixth month—should be richer in the antirachitic factor than it seemingly is. The fact that cod liver oil, which contains the so-called vitamin D, cures rickets does not prove that rickets observed in human infants primarily is a vitamin deficiency disease. Cod liver oil, it seems to me, is our civilization's excellent, economical and practical substitute—at least during the colder and darker half of the year—for exposure to sunlight. Is it not strange that the established vitamin deficiency diseases, such as xerophthalmia, beriberi and scurvy, are so rare in infants fed human milk from mothers, and that rickets is so common?

Do these facts not suggest that nature expects the human skin to be exposed to sunlight in order that the human infant may grow in a physiologic manner; or was it even a part of the plan that human beings migrate, as do the birds, to sunnier climes when the sun leaves our environment cold and dark?

Lack of exercise, especially when enforced by confinement, has been championed by Findlay more than by any one else as a primary cause of rickets, and yet any amount of exercise will not remove the characteristic pathologic features of rachitic blood and bone. Therefore it cannot be a primary factor in the development of rickets in human infants.

Likewise, heredity cannot contribute in a primary manner to the development or to the lack of development of rickets. No infant, however good the stock may be, can escape developing rickets if he is permitted to grow normally in the complete absence of the antirachitic factor. The rickets may be less severe than that found in another infant existing under the same conditions.

Such factors as heredity, lack of exercise, cow's and human milk containing diets, and vitamins all play merely secondarily etiologic rôles to the primary and fundamental cause of rickets, namely, inadequate exposure to the actinic rays or their equivalent of growing human infants.

The amount of exposure or the amount of antirachitic factor in the form of cod liver oil necessary to prevent rickets, according to studies which Wetzel, Nourse, Hartman and I have made on premature infants, seems to bear a direct relationship to the rate of growth. In other words, as the rate of growth usually is greater the younger the infant, his antirachitic factor requirement likewise is greater, and paradoxical as it may seem to be, the younger the infant the greater, for instance, is the amount of cod liver oil necessary to insure freedom from rickets. We have found that the actual maximum amount of cod liver oil required is not more than 1 cc., provided, of course, it is begun before the rickets develops. Therefore, in order to prevent rickets, the administration of cod liver oil or the exposure of the child to the actinic rays should be begun early—in our opinion not later than the beginning of the second week of life. The data forming the basis of these conclusions on the effectiveness of small doses of cod liver oil will be published later, and will offer adequate evidence to combat the idea that recently has begun to grow, that cod liver oil is not as potent as it had heretofore been thought to be in the prevention of rickets.

The great primary importance of the actinic rays to normal growth is evidenced by the fact that rickets occurs most severely and most frequently at the end of winter, and especially in those infants whose skins are pigmented.

In preventing rickets in premature infants it seems necessary, in addition to giving an adequate supply of the antirachitic factor, to increase their protein and mineral intake, even when they are getting human milk as a diet. This can be done in a very simple manner by adding some boiled skimmed milk to the diet.

When we prevent rickets we at the same time prevent the so-called idiopathic tetany or spasmophilia of infants. If rickets has developed and if it is continuously and adequately treated with the antirachitic factor, likewise spasmophilia or tetany will not appear. In other words, idiopathic tetany or spasmophilia will not appear if rickets is properly prevented or treated. However, if the treatment is interrupted, as it is unintentionally in the spring and fall when sunshine is present irregularly, then the spasmophilic picture will appear and sooner or later will give evidence in the roentgenogram of some healing having taken place, and in the blood serum of a change from the figures characteristic of a low phosphorus rickets to those of what unfortunately has been called a "low calcium rickets." In other words, low calcium rickets and spasmophilia develop in human infants only over the route of primary low phosphorous rickets which has been peculiarly treated.

2103 Adelbert Road.

DYSPHONIA: ITS SIGNIFICANCE AND MANAGEMENT *

GEORGE D. WOLF, M.D.
NEW YORK

This is unquestionably the era of the research worker. There is a demand for greater enlightenment and more accurate information on the various baffling medical questions, and modern laboratory methods bid fair to fulfil at least part of these expectations. For these reasons the medical profession has come to look to the laboratory, instead of to the clinician, for a solution of its problems. It is therefore with a certain feeling of timidity that I present this well known clinical entity for discussion. At the same time, because of this attitude, our medical literature shows a comparative paucity of topics pertaining to everyday practical problems.

Has any one a right to add to the burden of medical literature when nothing new can be contributed toward a knowledge of the subject? If the practitioner can find the desired information in almost any recent standard textbook, should he be burdened with additional papers? Obviously, such a query must be answered in the negative. In this instance, I am prompted by the following considerations to review this subject:

1. Horseness is a very common symptom presented by patients.
2. Too frequently the condition is treated as chronic laryngitis when more intensive study will reveal other underlying conditions.
3. Correct and early diagnosis is important since hoarseness is often the first and only danger signal of an existing serious disease, either local or systemic, in which prompt treatment might save the patient untold suffering and premature death.
4. A review of the standard textbooks does not reveal the subject of hoarseness treated as an entity under this title.

This paper is therefore presented in order to emphasize and stress certain features of this symptom, both individually and collectively.

Before I proceed with the subject, a brief description [1] of the mechanism of normal voice production may not be amiss. It is dependent on three functions of the "vocal apparatus," which includes (*a*) the larynx as the primary source of tone; (*b*) the chest as the source of motive power, and (*c*) the resonant chamber of chest, head and vault of the pharynx. Hence, in order to pro-

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

* From the laryngologic services of Riverside Hospital, Sydenham Hospital (service of Dr. Danziger), Harlem Hospital (service of Dr. Hubby), and Bronx Hospital (service of Dr. Ballin).

1. Ballenger, W. L.: Ear, Nose and Throat, ed. 4, Philadelphia, Lea & Febiger, p. 527.

duce a clear voice a proper respiratory act, unimpeded vibration of the vocal cords with their proper approximation, and a normal vault of the pharynx are essential. Manifestly, impairment of any of these elements in voice production may cause hoarseness. The classification of hoarseness is difficult. In a general way and for the purpose of description it may be stated that it may either be functional or organic. A diagnosis of functional hoarseness should be made only when organic disease can be excluded with a fair degree of certainty.

The hoarseness due to organic disease may be classified[2] according to etiology (inflammatory, noninflammatory, cerebrospinal, toxic) somewhat as follows:

1. Inflammatory:
   - (*a*) Acute laryngitis.
   - (*b*) Perichondritis following quinsy, typhoid, variola, scarlet fever, rheumatism or any acute infectious disease.
   - (*c*) Ankylosis or arthritis of crico-arytenoid joints.
   - (*d*) Pressure on recurrent laryngeal nerve or the vagi.
   - (*e*) Damage to crico-arytenoid muscle or arytenoid itself.
   - (*f*) Laryngitis sicca.
   - (*g*) Sinus disease.
   - (*h*) Dental origin[3]—probably a focal infection.
2. Noninflammatory:
   - (*a*) Benign or malignant neoplasms.
   - (*b*) Serous infiltration.
   - (*c*) Pressure of tumor on trachea.
   - (*d*) Pressure on recurrent laryngeal nerve or the vagi.
   - (*e*) Damage to crico-arytenoid muscle or arythenoid itself.
   - (*f*) Foreign body in the larynx.
   - (*g*) Prolapse of ventricle.
   - (*h*) Stenosis or web of laryux, congenital or acquired.
   - (*i*) Abuse of voice: failing to bring cords together.
   - (*j*) General anemia.
   - (*k*) Cardiac origin.
   - (*l*) Spasm of laryngeal muscles, as in laryngismus stridulus.
3. Cerebrospinal:
   - (*a*) Bulbar paralysis.
   - (*b*) Brain tumor.
   - (*c*) Syringomyelia.
   - (*d*) Bilateral paralysis of adductor or abductor muscles.
4. Toxic:
   - (*a*) Alcohol.
   - (*b*) Tobacco.

The pathologic condition varies with each etiologic factor; hence it would lead us too far afield to go into any detail.

A diagnosis[4] of the cause of hoarseness is at times exceedingly simple. The following reported cases are typical of a fairly large number of those seen:

REPORT OF CASES

CASE 1.—S. L., a man, aged 50, married and occupied as a tradesman, was referred to me by Dr. Jucovy because of hoarseness for the past eight months. He had consulted various physicians and was told that the condition was due to his occupation, which required the use of his voice to excess, and rest and steaming were therefore advised. Laryngoscopic examination revealed a small pedunculated growth in the anterior third of the vocal cord. Under local anesthesia this was removed by the indirect method. Speech returned almost immediately. The pathologic report was papillofibroma.

At other times, even with modern methods, the diagnosis is quite perplexing.

CASE 2.—I. S., a man, aged 43, presented himself in the clinic complaining of hoarseness which had lasted about a year. He gave a vague history of arrested pulmonary tuberculosis. Laryngoscopic examination showed a slightly inflamed larynx with a small wartlike growth in the interarytenoid space—a favorite site for tuberculous involvement. The nose, chest, blood and sputum were normal. A biopsy was done by the direct method, and two pathologists pronounced the specimen early carcinoma. The clinical observations did not exactly give the impression of a malignant growth, and the case was presented at the Laryngological Section of the New York Academy of Medicine. Subsequently, another pathologist examined the slide and pronounced it chronic inflammatory tissue. The patient was seen about a year later; there was no change in his condition. He refused to submit to further manipulation.

CASE 3.—J. O., a man, aged 60, a laborer, presented himself with a history of progressive hoarseness of about two years' duration. He gave an indefinite history of a possible syphilitic lesion with secondary manifestations twenty-eight years before. There was no loss of weight. Examination of chest and sputum proved negative, and the blood Wassermann reaction was likewise negative. Laryngoscopically he showed, on the left vocal cord, a tumor covering its anterior two-thirds, irregular in outline. The cryco-arytenoid joints were mobile. In view of the patient's age, the appearance of the tumor and its consistency, a clinical diagnosis of carcinoma of the larynx was made. Biopsy material was sent to a pathologist, who reported it to be a papillary fibroma. The patient was urged to have the growth removed lest it might become malignant. He passed from my observation. Some time later, Dr. D. H. Jones of this city informed me that the patient came to his clinic and pathologic specimens removed before and at operation of the larynx proved to be malignant.

At other times one's diagnostic acumen is taxed to the extreme.

CASE 4.—M. S., a woman, aged 62, a housewife, seen through the courtesy of Dr. Blutstein, gave a history of having become hoarse four years before, more or less suddenly. She visited a clinic where roentgenologic examination of the chest was advised, but she did not give the matter any further attention. For the past two months, she had experienced difficulty in swallowing of both fluids and solids. She also noticed rapid loss of weight and complained of pain in the back of the neck. Laryngoscopic examination revealed a complete left recurrent laryngeal paralysis. Though syphilis was not considered a probability, a blood specimen was obtained which later gave a negative Wassermann reaction. The patient was taken to a radiologist for an investigation of the probability of either a carcinoma of the esophagus of slow development or of a mediastinal tumor. Under the fluoroscope, fermented milk passed without obstruction, and the chest was normal. Films of the chest and esophagus were also normal. The family were told that we were dealing here with a serious condition and were advised to allow us to observe the patient in a hospital. From then on the patient passed from observation. Through the kindness of the family physician, the case was followed up. She was examined bronchoscopically by another laryngologist with negative results. She sought the opinion of a third very competent laryngologist, who advised another series of roentgen-ray plates to be taken in another position. Shortly after this, four weeks after I saw her, she suddenly developed a temperature ranging between 104 and 105 F. and died within twenty-four hours. The paralysis was probably of a cerebral origin.

Occasionally no reason for the hoarseness can be found.

CASE 5.—B. N., a married woman, aged 28, the mother of one child and employed as a telephone operator, referred by

2. Nelson's Loose Leaf Medicine **3**: 422, 428, 473, 658, 659. Jackson, Chevalier: Chalk Talk on the Larynx, syllabus number 2.

3. Harris, T. J.: Report of Six Cases of Dysphagia and Dysphonia of Dental Origin, New York M. J. **105**: 975 (May 26) 1917.

4. Osler, William: Practice of Medicine, ed. 8, New York, D. Appleton & Co., 1918, pp. 614-620. Holt, L. E.: Diseases of Infancy and Childhood, ed. 6, New York, D. Appleton & Co., 1911, pp. 462-470. Still, G. F.: Common Disorders and Diseases of Childhood, second impression, Oxford University Press, 1910, pp. 293, 295-297, 301-303, 576, 691. Lockard, L. B.: Tuberculosis of the Nose and Throat, 1909, pp. 68, 82, 85. Johnson, J. S.: A Case of Postural Hoarseness, Dublin J. M. Sc., November, 1926, p. 416. Myers, E. L.: Hoarseness Caused by Thyro-Arytenoid Interni Paresis with Symptoms Simulating Acute Pulmonary Tuberculosis Due to Sinus Infection, Laryngoscope **29**: 720, 1909. Watson-Williams, P.: Hoarseness, Importance of Early Clinical Diagnosis, Bristol Med.-Chir. J. **40**: 153, 1923; Clinical Importance of Hoarseness, Practitioner **108**: 153 (March) 1922. McCready, J. H.: Hoarseness, Its Relation to Local and General Diseases, Pennsylvania M. J. **21**: 521-523 (May) 1918.

Dr. Rothfeder, spoke with a whispered voice and stated that two days previously, after a violent argument with her husband, she had lost her voice. Laryngoscopic examination revealed a perfectly normal larynx with good approximation of cords, but no voice production. The diagnosis was hysteria. Her voice returned the next day, but dysphonia always followed excitement thereafter.

COMMENT

In children, the acute onset of hoarseness, although frequently considered a trivial condition, may at times become a matter of utmost seriousness and of immediate danger to life. A direct laryngoscopic examination to rule out the presence of a membrane should be insisted on in each case. This is a rather simple, quick, painless and most reliable method and should be done without any anesthetic, either local or general.

A foreign body in the larynx, usually a coin, is most commonly overlooked. Even when the mother insists on this, the family physician often refuses to admit the possibility of a coin slipping into the child's larynx. When a history is obtained of a child's sudden suffocation and cyanosis, just as suddenly relieved, only to be followed by hoarseness, a foreign body in the larynx should always be suspected. A roentgenogram is always indicated in these cases.

TABLE 1.—*Differential Diagnosis of Acute Laryngitis in Children*

1. Diphtheria	2. Perichondritis; rare	3. Pseudomembranous Croup	4. Foreign Body in Larynx	5. Laryngismus Stridulus	6. Thymus (Status Thymicolymphaticus)
(a) Laryngoscopically: membranous deposit on laryngeal mucosa, trachea, or both	(a) No membrane	(a) Membrane present	(a) Foreign body often seen	(a) Rare	(a) Membrane absent
(b) Positive culture from larynx	(b) Culture negative	(b) Culture negative	(b) No history of prodromal symptoms	(b) Occurs only in infancy and in rachitic children	(b) Culture negative
(c) Temperature usually not high	(c) Temperature comparatively high	(c) Temperature varies	(c) History of sudden suffocation	(c) Intermittent	(c) No rise of temperature
(d) Prostration great	(d) Prostration not so great	(d) Not much prostration	(d) No prostration	(d) History of previous attacks	(d) Roentgenogram shows enlarged thymic shadow
(e) No nocturnal exacerbation	(e) Nocturnal exacerbation	(e) Nocturnal exacerbation	(e) May or may not have nocturnal exacerbation	(e) Relieved by inhalation of anesthetic	
(f) Getting progressively worse				(f) Nocturnal exacerbation	
(g) Stridor, both inspiratory and expiratory					

In the more acute type of case, diphtheria, pseudomembranous croup, foreign body in the larynx, perichondritis, laryngismus stridulus and enlarged thymus must be borne in mind; in chronic cases, among the multiplicity of causes, adenoids, papillomas, tuberculosis, cerebral tumor, abuse of voice, feebleness of musculature of whatever cause, anemia, chronic laryngitis, congenital syphilis, and stenosis of the larynx (acquired or congenital).

Acute onset of hoarseness in adults is usually due to either primary or secondary laryngitis. When pain is marked in the larynx, herpes should be looked for. If dyspnea is great, one must always think of abscess in or around the larynx, or of acute edema. Laryngoscopic examination determines the cause. A diagnosis of chronic laryngitis should never be made until everything else has been ruled out. Though rare, sometimes a tuberculous patient may have carcinoma or syphilis of the larynx, and a syphilitic patient may have carcinoma or tuberculosis of the same organ.

A careful history is most essential in all cases.

The following information should be sought:

1. Mode of onset, whether slow or sudden; whether the attack of hoarseness follows a head cold or postnasal discharge.

2. Whether persistent or intermittent. If the latter, whether it follows an excessive use of the voice, or whether patient gets up with clear voice in the morning and becomes hoarse toward the afternoon, or vice versa.

3. Habits, such as alcohol, tobacco.

4. Occupation. Whether it requires an excessive use of the voice, whether the place of employment is dusty or smoky, and as to the presence of irritating gases.

5. Preexisting illnesses. Special attention is to be paid to pain in the larynx, cough and loss of weight. The latter subjective complaint will often be concealed intentionally by the patient lest he be told that he suffers from a serious illness, especially tuberculosis. Hence it is practical to inquire as to what he weighed six months before, and weigh him again in the office; also inquiry should be made about the frequency of head colds and syphilitic infections.

6. Rectal temperature, pulse and respiration rate, which are useful aids.

7. A careful nasal examination. This is very essential, and when one is in doubt paranasal sinuses should be roentgenographed.

8. A laryngoscopic examination, direct, indirect or both.

This examination is absolutely indispensable in each and every case.

When, in spite of the foregoing information, the diagnosis is still obscure, biopsy, sputum, blood Wassermann and urine examinations, bronchoscopy and esophagoscopy should be resorted to.

The most important differentiations are between chronic laryngitis, benign growths, syphilis, tuberculosis and carcinoma.

Of the benign growths short reference will be made to angioma.[5] This is a very rare neoplasm. When it is present a history of repeated hemoptysis and hoarseness is given, and because of this, such cases were reported to have been mistaken for tuberculosis and the patients confined to institutions.

The most common characteristics of angiomas are: subjectively, hoarseness, dyspnea, stridor and bloody expectorations; objectively, a small pedunculated or sessile reddish growth situated in the anterior half of the cord. When this becomes erect, smaller and firmer, and takes on a deeper hue during phonation, it is almost certain to be an angioma.

5. Wolf, G. D.: Angioma of the Larynx, M. J. & Record (supp.) 14-15, July 2, 1924.

MANAGEMENT

The scope of this paper would naturally not permit me to enter on this subject in any great detail.

Abuse of voice is best taken care of by those trained in the management of speech and voice defects.

Benign growths must be removed surgically. With the advent of various direct laryngoscopes, the old art of indirect laryngeal invasion is gradually losing ground. This is to be regretted because with a fair amount of experience one can accomplish just as much with this comparatively simple but efficient procedure. It must not be forgotten that there still are a great number of patients who would rather remain hoarse than submit themselves to direct laryngoscopy with either the Jackson or Hasslinger type of directoscope.

Hoarseness due to laryngitis sicca deserves especial attention. This invariably follows a similar pathologic condition in the nose. It usually begins as a mild progressively increasing dysphonia. Unless diagnosed early and checked promptly it may cause sudden dangerous asphyxia, and nothing short of tracheotomy will save the patient's life. When seen early, the scabs impregnating the larynx must be softened down with alkaline sprays and medicated oil injected into the trachea until all hard secretions are seen to loosen and are coughed up by patient. Sometimes a cotton-wound laryngeal applicator must be used to help loosen up the scabs. The patient must be watched for recurrences at reasonably frequent intervals. The nose must receive appropriate treatment.

TABLE 2.—*Differential Diagnosis in Chronic Hoarseness*

	Chronic Laryngitis	Tuberculosis	Syphilis	Benign Growths	Malignant Growths
1. Sex	Male (alcohol, tobacco) more common	Both	Male (predominant)	Any	Varies
2. Age	Any	Between 20 and 40	Any	From 20 years up	Usually after 45
3. Onset	Slow	Slow or rapid	Rapid	Sudden and progressively worse	Slow or rapid
4. Duration	Long	Long or short	Long; progressive if not treated	Long	Long or short
5. Intermittent	Usually	Progressive	No	Steady	Steady
6. Constitutional symptoms	Slight or nil	Usually present	Slight	None	None early but present later; loss of weight, cachexia
7. Climatic conditions	Worse in bad weather	Improved in dry climate	Not affected	None	No
8. Rest	Improved by	Improved by	Not improved	No	No
9. Pain	Absent	Absent early, usually present later; depends on location of lesion	Absent	Absent	Present
10. Laryngoscopically					
(a) Diffuse hyperemia and thickening of all the mucous membrane of the larynx including the true vocal cords		Varies from edema of arytenoids only to involvement of whole larynx with ulceration	General erythemia	Small pedunculated or sessile tumor on any part of vocal cord	Predilection for involvement of anterior portion of vocal cords
(b) Mucous membrane atrophic in the atrophic type; hypertrophic in the hypertrophic type		Pale, glassy and edematous; tuberculomas may be present	May be normal	Some secondary laryngitis	Varies with stage of growth
(c) Secretions absent unless complicated by bronchitis; scabs may be present		Scanty, grayish,ropey; also depends on pulmonary condition	Profuse; purulent yellow	Absent	Foul smelling blood stained slough
(d) Mobility: unaffected or tardy		Unaffected or tardy only when edema of arytenoids is pronounced	Unaffected, when unilateral paralysis exists, probably due to pressure on recurrent laryngeal nerve by aneurysm or of central origin	Not impaired	Impaired
(e) Ulcerations: none		1. Superficial, moth-eaten surface 2. Mild red areola 3. Ragged, ill defined edges 4. Indistinct demarcations	1. Deep and angry surface; frequently unilateral 2. Angry red areola 3. Sharply cut edges 4. Distinct demarcations	None	Diffuse, on an indurated base, deep, with everted edges

For chronic laryngitis, rest of voice, steaming, and the administration of mild expectorants, such as ammonium chloride or potassium iodide, are good adjuvants. While not an established fact, it is my opinion that chronic laryngitis is usually a secondary condition, and that the primary offender is usually the nose. Unfortunately, this fact is often lost sight of, as the following case very well illustrates.

CASE 6.—W. C., a married man, aged 31, a broker, who had been taxing his voice a great deal, complained of extreme hoarseness for one year, which had resisted all forms of treatment. He complained also of postnasal dropping and headaches. His relevant past history included a tonsillectomy seven years before, submucous resection five years before, and two removals of polypi on the right side, and four months before, respectively. Nasal examination revealed the presence of polyps and pus in both middle meatuses. Transillumination showed diminished illumination of the frontal and ethmoidal sinuses, and darkness of both antrums. Roentgen-ray examination confirmed these observations. Roentgen-ray examination of the chest showed only slight thickening of each hilum but no evidence of tuberculosis. The Wassermann reaction was negative and the sputum normal. After the polypi had been removed and a radical double antrum operation performed, according to the Cauldwell-Luc method, the patient's voice returned to normal except for a slight recurrence following an attack of grip, which cleared up without much attention.

TUBERCULOSIS OF THE LARYNX.[6]

It is often hard to convince the family physician that:

1. Normal sputum and presumably a normal chest does not exclude tuberculosis of the larynx.

6. Danziger, Ernest: Laryngeal Tuberculosis and Its Treatment, M. J. & Record **119**: 556 (June 4) 1924. Thomson, St. Clair: Tuberculosis of the Larynx: Treatment with the Galvanocautery: Indications, Results, Technic, Lancet **1**: 1084 (June) 1926, quoted by the Archives of Otolaryngology, November, 1926, p. 453. Blevgrad: Light Treatment of Laryngeal Tuberculosis, Rev. de laryngol., Feb. 28, 1923. Strandberg, Ove: The Treatment of Rhinolaryngological Tuberculosis by Finsen Light Bath and Results, Lancet **2**: 1236 (Dec. 8) 1923. Spencer, F. R.: The Medical and Surgical Treatment of Laryngeal Tuberculosis, Ann. Otol., Rhin. & Laryng. **34**: 424 (June) 1925.

2. Tuberculosis of the larynx is not necessarily a late involvement of an advanced pulmonary condition. It may occur relatively early.

3. Tuberculosis of the larynx is not incurable.

(*a*) Since a negative sputum does not exclude pulmonary tuberculosis, the same statement must needs hold true for the larynx, too.

(*b*) One occasionally sees either mild or a very advanced laryngeal tuberculosis in cases in which hoarseness was the first and only complaint, and in which, only after a thorough search, a questionable pulmonary involvement was established. The following case report illustrates this point:

CASE 7.—A married woman, aged 24, the mother of one child and expecting another in about a month, came to the clinic complaining of very severe hoarseness and dysphagia. Examination revealed marked involvement of the whole larynx with ulcerations. Physical examination of the chest and sputum was negative, as was the Wassermann reaction. The results of a roentgen-ray examination of the chest were doubtful. The patient was advised to enter the hospital and have labor induced immediately. This she refused. Through the social service department, the case was followed up. Her family physician referred her to another laryngologist, who confirmed our diagnosis. During and immediately after the puerperium the patient grew rapidly worse and succumbed. The cause of death was given as pulmonary and laryngeal tuberculosis.

(*c*) In a given case in which a clinical diagnosis of tuberculosis of the larynx had been made, the mode of procedure would depend on two factors; first (by far the most important), the condition of the chest; second, the amount and type of involvement in the larynx. The involvement of the latter does not necessarily always go hand in hand with the chest involvement. One may have a marked involvement of the chest (this type is seen in institutions) and very little, if any, in the larynx; or advanced tuberculosis of the larynx when there is an arrested pulmonary lesion or when a pulmonary lesion is very difficult to establish, with all our present methods at hand. The latter type is encountered frequently in clinics and private practice. Here, too, rest is the most important treatment and the most difficult to carry out. Even whispering is prohibited, and the patient must use pencil and paper. When this can be carried out, half the battle is won. There are those who believe that this gives as good results as any. Indeed, it is sufficient for the very mild and the only resort in advanced cases. In the latter, on account of dysphagia, the patient must also be given a cocaine spray and the instillation of orthoform emulsion before feeding. The efficacy of local applications of such substances as lactic acid or solution of formaldehyde is questioned by many, including myself. When the mucous membrane is intact, local application ought to be avoided so as not to injure this most important protective agent. When there is ulceration or edema which is causing the dyspnea, galvanocautery punctures are by far the best.

St. Clair Thomson, in his recent paper on this subject,[6] says:

The three chief conclusions arrived at are that: (1) as a local help the galvanocautery is the most valuable remedy we possess at present; (2) the cases in which it is suitable are relatively few; (3) these cases, well selected, yield a cure in a large proportion.

No patient who has not been treated in the sanatorium for three months is ever submitted to the galvanocautery, the effect of rest on the voice having first been determined. The most promising patients are those in whom the disease is restricted to the intrinsic larynx, i. e., the vocal cords, the interarytenoid and the arytenoid regions. The treatment is dangerous during an acute invasion by the disease, or if there is perichondritis or pain and dysphagia. The general condition of the patient must also be studied. If there is an unsteady temperature, quick pulse, failing weight or feeble resistance, it is unwise to use the cautery.

During a period of fourteen years at Midhurst sanatorium, 17.5 per cent of the total number of patients had laryngeal tuberculosis. Of the 620 patients with laryngeal tuberculosis, 16.61 per cent were considered suitable for cautery treatment (as many patients are cured by being silent or whispering). The number of treatments average about 3.2 applications, and each application should be about one month apart. A cure resulted in 62 per cent of the cases during the first ten years of the period and in 69 per cent during the last four years. During the first ten years, a cure was secured by silence, whispering, or by the galvanocautery in 25 per cent of the cases of laryngeal tuberculosis. The author prefers the indirect method of applying the galvanocautery under local anesthesia. A fine platinum point is used at white heat at the edge of the ulcer, the object being to promote inflammatory and limiting fibrosis. Several punctures may be made at one sitting, the number depending on the size of the diseased area.

LIGHT TREATMENT

I have not had any personal experience with light treatment. Some very good results are reported, especially from continental clinics. Blevgrad[6] of Copenhagen reports as high as 40 per cent cured among 178 patients, including a majority of cases of advanced laryngeal tuberculosis. Fifty of those patients that were not cured were greatly improved; in twenty-four the disease was slightly ameliorated; six remained unaffected, and in twenty-seven the process progressed. He employs powerful arc lamps (25 amperes) of special construction, and the light obtained reaches from 4,000 to 7,200 Hefner units.

Strandberg[6] reported very good results from the use of the Finsen baths. In 100 patients thus treated, fifty-three were cured, ten were still under treatment but improved, and thirty-seven lapsed. In the latter group nineteen were improved; six unchanged; six, aggravated, and six died. From these data, we may readily conclude that a tuberculous patient with laryngeal involvement is far from doomed to death.

CARCINOMA[7]

Because there is no direct communication between the lymphatic system of the larynx with the outside, and because it is confined in a cartilaginous box, one must not wait for glandular enlargement and loss of weight in the intrinsic type of carcinoma.

When diagnosed early, correctly applied surgery offers a high percentage of cures (as high as 80 per cent reported by some).

In the late inoperable case, roentgen-ray and radium treatments are perhaps the only resort. The same holds good for the extrinsic type. In the latter, when the lesion is limited, electrocoagulation has been used with some success.

SUMMARY AND CONCLUSIONS

From the foregoing observations, it seems justifiable to conclude that:

1. Since the larynx is accessible for both inspection and manipulation, no case of hoarseness should escape laryngoscopic examination.

7. Thomson, St. Clair: Diseases of the Nose and Throat, New York, D. Appleton & Co., 1926, pp. 508-509, 519, 548, 558-559. Mackenty, J. T.: The Operative Treatment of Cancer of the Larynx, J. Laryng. & Otol. **39**: 67 (Feb.) 1924. Lewis, F. O.: Early Diagnosis and Treatment of Malignant Diseases of the Larynx, Atlantic M. J. **26**: 797 (Sept.) 1923. Sargnon: Malignant Neoplasms of the Pharynx and Larynx, Surgery, Radium and Radio-Therapy, Arch. internat. de laryngol. otol. rhinol., November, 1923.

2. Hoarseness is annoying to the patient not only in itself but because of the persistent curiosity on the part of friends and relatives.

3. A syphilitic or a tuberculous patient may have a different or mixed lesion in the larynx.

4. Dysphonia of more than three weeks' standing should be looked on with apprehension until proved otherwise than serious.

5. Early diagnosis will often save the patient agony and death.

6. Pathologic, serologic and other laboratory tests, like clinical diagnosis, are not infallible and should be checked up.

7. When there is discrepancy in the pathologic reports, the decision must lie with the clinician.

8. When the biopsy report is contrary to the clinical evidence, the former should be disregarded.

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ABSTRACT OF DISCUSSION

DR. FRANK R. SPENCER, Boulder, Colo.: Dr. Wolf has called attention to dysphonia as an entity rather than as a symptom of some disease. As clinicians we must be prepared to diagnose the disease which is causing the dysphonia. It is difficult for me to think of dysphonia as an entity. We are all familiar with the hoarseness or even aphonia as a symptom of an acute cold, sinuitis, tonsillitis, influenza, pneumonia, typhoid and the acute infectious diseases of children. Dr. Francis P. Emerson has emphasized the frequency with which infections in the nose and nasal accessory sinuses may travel down to the chest; infections in the lungs may extend upward, and those infections manifesting themselves first in the tonsils and pharynx may extend either up or down or both. If the larynx is normal, hysteria should be excluded. Paralysis of the left recurrent laryngeal nerve suggests aneurysm of the aortic arch, and paralysis of the right inferior laryngeal nerve may be caused by aneurysm of the right innominate artery. Either may be caused by a dilated heart, tuberculous glands, goiter, or benign or malignant tumors in the mediastinum. Other paralyses may be of central origin. Recurrent attacks of dysphonia in adults are often caused by syphilis and tuberculosis; less frequently by rarer diseases, such as carcinoma, lupus, actinomycosis, papilloma or other benign tumors. Foreign bodies often are a cause. Focal infection is likewise very important. I believe that so many cases of dysphonia are caused by general diseases that we constantly need the help of the internist, the pediatrician and the laboratories. Dr. Wolf mentions the importance of absolute silence, whispering and the cautery in the management of the tuberculous larynx. He emphasizes also light therapy, but this has not been very satisfactory in the hands of most laryngologists. Heliotherapy is very important: first, because it lessens pain, and second, because it has a definite curative value. Heliotherapy is less expensive for patients to use, because they can be taught to treat themselves, as a rule, even when they are being cared for in an institution. Dr. Wolf emphasized the importance of early diagnosis. I heartily agree that early diagnosis is extremely important, because without it very little, if anything, can be accomplished of curative value.

DR. HOMER DUPUY, New Orleans: The recurrent laryngeal nerves have two sets of fibers, one for abduction, openers of the glottis, the other for adduction. They are closers of the glottis. The first indication of pressure on the recurrent nerve is dysfunction of the abductors. In pressure from hyperplasia of the thyroid, there is, at first, a predysphonic phenomenon. When the left or right thyroid lobe presses on the recurrent nerve, the first effect of the pressure is on the abductor fibers. There is no aphonia. But as the pressure continues and increases it will implicate both the abductors and the adductors with complete paralysis of the nerve. Preoperative examination of all thyroid cases is important. It protects both the patient and the operator. We may sometimes catch the patient in the initial stage of abductor paralysis, before dysphonia has set in. We can then advise earlier operation to prevent complete recurrent paralysis. Secondly, if we have preoperative information that a nerve involvement is already present, and should the vocal disturbance lead to a malpractice suit, we can then protect the operator.

PREGNANCY AND NEUROSYPHILIS*

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In 1922 a study was published by Moore[1] which showed, after careful analysis, that pregnancy tended to protect women from the late accidents of neurosyphilis and that the apparent predominance of late neurosyphilis in men as compared to women could largely be explained on this basis. A study along the same lines appeared in 1926 by Solomon,[2] who, after analyzing 559 cases, concluded that his results tended to corroborate those of Moore in ascribing to pregnancy a protective influence against late neurosyphilitic accidents.

Experimental evidence bearing on this question is found in the work of Brown and Pearce[3] on the inoculation of pregnant and lactating rabbits with syphilis. These observers found that only half of the gravid and lactating animals inoculated developed evidence of primary lesions, while all the controls developed such lesions in the usual time. It is important to note, however, that in this experiment half of the gravid and lactating animals which did show evidence of primary lesions developed at the same time constitutional disturbances and emaciation not seen in any of the control animals.

That pathologic conditions inducing profound changes in metabolism can affect the course of syphilis and notably influence the occurrence of neurosyphilis is suggested by the work of Mattauschek and Pilcz,[4] who showed that, in a group of soldiers recently syphilitic, those having constitutional disease with high fever during the first year of the infection showed a much smaller incidence of late neurosyphilis than did the group in which such diseases did not occur.

The infrequency of neurosyphilis in countries in which malaria is endemic, as has been brought out by recent studies, also tends to show that profound constitutional disturbance resulting in high fever can influence the course of syphilis with regard to neurosyphilitic accidents.

The alleged protective influence of pregnancy against syphilitic lesions is suggested by Routh[5] to be due to chorionic ferments which may cause a breaking up of spirochetes into granules and thus hold them inactive during the pregnant state.

On the other hand, the literature contains many references which tend to show that the converse is true;

*Studies and Contributions of the Department of Dermatology and Syphilology of the University of Michigan Medical School, service of Dr. Udo J. Wile.

* Read before the Section on Dermatology and Syphilology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

1. Moore, J. E.: Studies in Asymptomatic Neurosyphilis: III. The Apparent Influence of Pregnancy on the Incidence of Neurosyphilis, Arch. Int. Med. **30**: 548 (Nov.) 1922.

2. Solomon, H. C.: Pregnancies as a Factor in the Prevention of Neurosyphilis, Am. J. Syph. **10**: 96 (Jan.) 1926.

3. Brown, W. H., and Pearce, Louise: On the Reaction of Pregnant and Lactating Females to Inoculation with Treponema Pallidum: A Preliminary Note, Am. J. Syph. **4**: 593 (Oct.) 1920.

4. Mattauschek and Pilcz: Ztschr. f. d. ges. Neurol. u. Psychiat. **8**: 133, 1912; ibid. **15**: 608, 1913.

5. Routh, A.: Spirillolysis and Its Causation, Lancet **2**: 988 (Nov. 13) 1920.

namely, that pregnancy does not protect against syphilitic accidents, and, indeed, that in some cases it may predispose to them. Gellhorn [6] calls attention to the reappearance of lesions during pregnancy after a period of latency, and quotes Augagneur,[7] Rille,[8] Winckel [9] and Zweifel [10] as having made similar observations. More recently Bertin [11] and Recamier [12] have noted the reactivation of both congenital and latent syphilis during pregnancy.

With a large and carefully checked material at my disposal, I determined to undertake the present study with the idea of shedding further light on this interesting subject, and especially to bring forth further evidence as to the influence of pregnancy on late syphilis of the nervous system.

The cases studied have been taken from the records of the University of Michigan Hospital in their numerical order between July 1, 1920, and June 30, 1925. One factor that will tend to make the incidence of central nervous system involvement higher than in most places is the fact that many of these patients come to the clinic because of central nervous system involvement.

TABLE 1.—*The Incidence of Central Nervous System Invasion in Early Syphilis in Males and Females*

Sex	Cases	Central Nervous System Invasion	Percentage
Males	96	20	20.8
Females	85	18	21.2
Total	181	38	20.9

It is generally accepted that definite deviations from the normal in the spinal fluid are sufficient evidence for the determination of cerebrospinal involvement. That this involvement is frequently a transitory phenomenon in the nature of an enanthem must also be accepted in view of the spontaneous disappearance of such conditions and their ready disappearance under treatment.

Invasion of the nervous system, therefore, should be sharply differentiated from involvement in an analysis of this sort. The latter suggests at least pathologic features of a more or less permanent nature and leading immediately or potentially to symptoms.

A positive Wassermann reaction of the spinal fluid is seldom found except where other evidence exists of actual tissue involvement.

While I believe that other deviations in the cerebrospinal fluid from the normal probably frequently indicate syphilitic disease, and conversely, that serious disease may exist without a positive Wassermann reaction, I have taken as a criterion of definite tissue injury the positive spinal fluid Wassermann reaction for the purposes of this study.

Syphilis as a whole is seen in our clinic practically twice as frequently in males as in females, the exact ratio being from 6.3 to 3.7, and if we based our conclusion as to neurosyphilitic incidence on the total number of cases, we should find a much larger incidence in men than in women.

6. Gellhorn, George: Influence of Syhilis upon Pregnant Women, Surg. Gynec. Obst. **32**: 535 (June) 1921.
7. Augagneur: Prov. méd. **7**: 37, 1892, quoted by Gellhorn.
8. Rille: Deutsche med. Wchnschr. **30**: 624, 1904, quoted by Gellhorn.
9. Winckel: Handbuch der Geburtshilfe **2**: 631, 1904, quoted by Gellhorn.
10. Zweifel: Arch. f. Gynäk. **92**: 225, 1910, quoted by Gellhorn.
11. Bertin, E.: Latent Syphilis and Pregnancy, Presse méd. **34**: 278-279 (March 3) 1926.
12. Recamier: Congenital Syphilis Roused by Pregnancy, Ann. d. mal vén. **20**: 515-517 (July 1) 1925.

To establish a comparative percentage incidence of central nervous system invasion and involvement, I have examined approximately equal numbers of male and female cases. The results are shown in tables 1 and 2.

TABLE 2.—*The Incidence of Central Nervous System Involvement in Late Syphilis in Males and Females*

Sex	Cases	Central Nervous System Involvement	Percentage
Males	379	160	42.2
Females	396	150	37.6
Total	775	310	40.0

By early syphilis I mean those cases showing primary or secondary lesions. By late syphilis I mean all cases which have passed the secondary stage and include latent syphilis and all tertiary manifestations.

A comparison of these tables shows the incidence of central nervous system invasion in early cases to be practically identical in males and females, and these figures are precisely those of Moore. With regard to the incidence of cerebrospinal involvement in late syphilis, I present my analysis of 396 women as compared with 379 men. The total incidence of cerebrospinal disease in this group was 42.2 per cent for the men and 37.6 per cent for the women. The female group included both parous and nulliparous women.

TABLE 3.—*The Incidence of Central Nervous System Invasion in Early Syphilis in Parous and Nulliparous Women*

	Cases	Central Nervous System Invasion	Percentage
Parous	44	12	27.3
Nulliparous	41	6	14.6
Total	85	18	21.2

It would appear, therefore, from these figures, that no great difference existed which could be ascribed to the difference in sex.

Carrying the analysis further in the female group to determine the influence of pregnancy on invasion and involvement of the central nervous system, it is found that of the eighty-five women included in the early group (table 3), forty-four had been pregnant and forty-one had never been pregnant. Of the parous women 27.3 per cent showed invasion, as compared with only 14.6 per cent who had never been pregnant. Thus, in the early group a much larger percentage of parous women showed invasion than occurred in the nulliparous cases.

TABLE 4.—*The Incidence of Central Nervous System Involvement in Late Syphilis in Parous and Nulliparous Women*

	Cases	Central Nervous System Involvement	Percentage
Parous	290	111	38.3
Nulliparous	106	39	36.7
Total	396	150	37.6

In the late group (table 4), 111 out of 290 cases, or 38.3 per cent of the parous group, showed cerebrospinal involvement, as against thirty-nine in 106, or 36.7 per cent in the nulliparous group.

A comparison of total pregnancies of patients with and without neurosyphilis has been possible in this

series, and seems to shed an interesting light on the question of protection afforded by repeated gravidity.

From table 5 it may be seen that of 150 neurosyphilitic women there was a total of 370 pregnancies as against 578 pregnancies in 246 syphilitic women without cerebrospinal involvement. Expressed in terms of average pregnancies, this is 2.46 for the neurosyphilitic group and 2.35 for the group without central nervous system involvement. Further analysis shows no great disparity in the number of living children and stillbirths for both groups.

TABLE 5.—*Comparison of Number of Pregnancies and Results of Pregnancy in Late Syphilis With and Without Central Nervous System Involvement*

Diagnosis	Number of Women	Number of Pregnancies	Average Number of Pregnancies	Results of Pregnancy: Living Children No.	Living Children %	Stillbirths and Miscarriages No.	Stillbirths and Miscarriages %
Neurosyphilis.	150	370	2.46	227	61.3	143	38.7
Late syphilis without central nervous system involvement...	246	578	2.35	367	63.5	211	36.5
Total.....	396	948	2.39	594	62.7	354	37.3

From these figures in this group of cases, and based on our criteria, there would appear to be no protective influence caused by the pregnant state in the prevention of neurosyphilitic disease.

Moore[1] states that the greatest protection from neurosyphilis exists when the pregnancy occurs in the first year of the disease. The material at my disposal does not afford a fair criticism or comparison of this point, as in this group the history of primary and secondary lesions in women is so unreliable as to be completely disregarded. I have, however, noted occasional cases of acute cerebrospinal involvement coincident with pregnancy.

CONCLUSIONS

1. Cerebrospinal invasion and involvement in early syphilis is about equally divided between men and women.
2. Sex, therefore, does not appear to be a factor in the prevention of cerebrospinal involvement.
3. In this group of cases in early syphilis a much higher percentage of central nervous system incidence occurred in the parous group than in the nulliparous group.
4. In late syphilis the percentage of neurosyphilitic incidence in parous and nulliparous women is practically the same.
5. In the group of cases here studied, pregnancy did not seem to be a factor in the prevention of neurosyphilitic accidents.

ABSTRACT OF DISCUSSION

DR. J. E. MOORE, Baltimore: Since Dr. Belote does not clearly draw the distinction between clinical and asymptomatic neurosyphilis, his figures are not exactly comparable to those which I published some years ago in a paper in which I stated that women were less likely to develop clinical neurosyphilis than men. I have reviewed in another connection the admission diagnoses of the 4,000 most recent admissions to the clinic, including almost precisely equal numbers of males and females. In this group of patients, 6.1 per cent of the males were diagnosed tabes; 2.9 per cent, general paralysis or taboparalysis; and 15.4 per cent had diffuse cerebrospinal syphilis. Of the females, only 1.5 per cent had tabes, 0.6 per cent taboparalysis or general paralysis, and 8.3 per cent diffuse meningovascular neurosyphilis. These figures are closely corroborative of those I published five years ago, and the two series now comprise more than 9,000 syphilitic patients. Thus, in my material parenchymatous neurosyphilis is four times as frequent in men as in women and diffuse meningovascular neurosyphilis twice as common. Approaching the subject from another angle, I am able to report the results of routine spinal fluid examinations in 1,216 patients with various forms of late syphilis but without clinical evidence of neuraxis involvement; of these, 565 were males and 651 females. The spinal fluid was positive in 17.7 per cent of the males and 11.6 per cent of the females. In the white race the difference in the percentage of asymptomatic neurosyphilis is small, 17.6 per cent of 295 males and 15.7 per cent of 190 females. Among negroes, positive fluid observations were present in 17.7 per cent of 270 males but in only 10.1 per cent of 461 females. As for clinical neurosyphilis, the same sex differences are apparent in the two races, though neurosyphilis of all types is considerably less frequent in negroes than in white persons. The most important feature of this problem is that though the nervous system may be invaded with equal frequency in the two sexes, as attested by the almost equal incidence of early asymptomatic neurosyphilis in males and females, women are much less likely to develop outspoken clinical neurosyphilis, especially of the parenchymatous type. There are many angles from which the question might be approached, and it is even possible that it may ultimately be of some importance in the treatment of syphilis. It is well worth while to review the subject in more detail, and we are greatly indebted to Dr. Belote for giving us the impetus.

DR. JOHN H. STOKES, Philadelphia: I imagine the differences between the points of view of those of us who believe with Dr. Moore that pregnancy does have a definitely beneficent effect on the course of syphilis in the woman, and the view supported by Dr. Belote from his experience could be reconciled by adopting a similar basis for comparisons. In such a case it would be necessary for Dr. Belote to explain a little more fully whether the pregnancies which he considers antedated the syphilitic infections of his women or postdated them. I do not think that any of us would contend that pregnancies antedating syphilitic infection would have any effect in reducing the severity of the disease in the female. The second point for discussion would concern Dr. Belote's distinction between invasion and involvement. Dr. Shaffer and I encountered precisely this problem in trying to classify neurosyphilitic involvement into grades and types, and came to the conclusion that nomenclature has many pitfalls here. Chesney and likewise Wile have, for example, shown that the spinal fluid may be what we call negative clinically, yet spirochetes may be present in the fluid. Our criteria, such as the Wassermann test, are therefore hardly criteria of involvement at all, but rather of reaction. It is perhaps a little early yet to say just what sign corresponds to what tissue reaction; but, once this problem is cleared up, a basis for a classification should appear that will make the results of Moore and Solomon, and of Belote, more nearly reconcilable.

DR. GEORGE H. BELOTE, Ann Arbor, Mich.: The diagnosis in this group of cases was based on laboratory observations, and consequently it is impossible to attempt to divide them into general paralysis, tabes, taboparalysis and meningovascular types, even if we desire to do so. It would require a great deal more study from a clinical standpoint and it could not be done with the material available at present. The question of race has been brought up. I am familiar with the work of Zimmerman and others and this may have some influence on my figures. Our clinic is almost entirely white. It is rather rare to see a colored patient. The question regarding the time of the pregnancy was answered during my first presentation. I said that in our material the history of primary and secondary lesions was so unreliable that we did not care to accept it, so I cannot give information on that point. The question of invasion and involvement, of course, could consume a great deal of time. I believe that all of these early cases are invaded and that sooner or later some of those will be involved. How many of them will depend on the treatment and the individual resistance of the particular patients, so I feel that it is proper to say that the early cases are invaded and some of them most certainly will later be involved.

PAIN

ITS VALUE; ITS ELUSIVENESS *

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The first step to successful treatment is a correct diagnosis. Pain, which is nature's semaphore, is an exceedingly important subjective symptom.

With modern methods of diagnosis pain, which is a purely subjective phenomenon, can almost be classed as an objective symptom. Often, for example, pressure might elicit pain, or movement might produce it; regardless of the stimulation, the questions of the precise nature of the pain, where and at what times experienced, are important factors, and however subjective the pain might be from the standpoint of the patient, its interpretation always presents to the physician a problem in objective diagnosis.

The experience of roentgenologists shows that the severity, persistence or total absence of pain are often at variance with the magnitude of the disease; also that many combinations or complications exist.

Roentgen-ray diagnosis often assists in explaining the cause of pain because it reduces the intangible to the tangible.

Pain as the initial or outstanding symptom is common to many pathologic conditions not always easy to differentiate. The first consideration should be to determine whether the condition is medical and amenable to medical treatment, or whether the pain indicates the onset of some serious surgical condition that may require operative relief. For instance, a number of nonsurgical conditions may cause upper abdominal pain, such as simple gastric indigestion, food or ptomain poisoning, or the ingestion of poisonous drugs or substances; or conditions above the diaphragm, such as pleurisy, pneumonia, pulmonary abscess or infarct, thoracic aneurysm, mediastinal inflammation or neoplasms, may produce pain in the upper part of the abdomen. It is therefore quite obvious that a method which can tangibly account for the pain is a valuable adjunct.

Diseases often present themselves in an atypical and bizarre manner: occasionally a pain syndrome is absent, or the pain is very severe or exaggerated from the standpoint of patient tolerance, or sometimes it is minimized by a hyposensitive individual.

There are many diseases in which pain is absent; so many complications and combinations, particularly in adult life, may coexist that one must be on the alert to recognize them because of their influence on one another, affecting seriously the prognosis or occasionally prohibiting a serious surgical intervention. It is quite proper to mention just a few of these diseases, namely, pernicious anemia, early sarcoma, and often carcinoma, in which pain is distinctly absent or mild and the termination fatal.

The foregoing remarks will impress one with the vagaries of that most important indicator of disease, pain.

Quite a few years ago I was impressed by the outcome of a case in which a roentgen-ray examination of a hip was made with negative results. Several weeks later, the knee on the same side was examined radiographically; here, too, the result was negative. About one month later a film of this patient's left pelvis, hip and entire femur was brought in for examination, and it was quite evident that we were dealing with a metastatic carcinoma involving the middle of the shaft of the femur. Two phases of this case were interesting: first, a history was not given by the attending physician of a previous breast amputation; second, as it is known that referred pain to the hip or knee joint is a frequent occurrence, an immediate examination of the whole bony structure of the lumbar spine, pelvis, hip, femur and knee on the affected side should have been made.

As a matter of common practice, a regional examination should be made. By so doing a roentgenologist can dignify his work by bearing in mind a differential diagnosis suggesting what roentgenographic procedures are necessary to enhance his own work and can place himself in the recognized position of consultant.

Another case of referred pain was presented by a patient who had been operated on for carcinoma of the breast with a subsequent epigastric pain. A tentative diagnosis of carcinoma of the stomach was made, but a complete gastro-intestinal examination revealed a normal stomach and a pathologic appendix.

Often a gastro-intestinal examination is made with negative result. However, should one observe a dilated aorta, an exploratory operation can be averted by entertaining the possibility of a tabetic gastric crisis; here, again, we see the disingenuousness of pain.

Aortitis is curiously interesting because the peculiar clinical symptoms, such as dyspnea, particularly on exertion, a sense of oppression in the chest and frequent sighing respiration, indicating air hunger, are early mainifestations common to numerous diseases, while pain and orthopnea develop later; and often how easy it is to clarify the condition by a simple roentgen-ray examination of the chest.

A swelling of any of the neck glands with or without pain should be accounted for by a neighborhood focal infection, which may be tonsillar, pharyngeal or dental in origin; or it may be obstructive, caused, probably, by a salivary calculus in the submaxillary gland; a Hodgkin's or primary blood disease, or a sarcoma.

An interesting case in which anticipatory events were considered showed a hard nodular mass about the size of a pigeon's egg at the angle of the right jaw, of about two months' duration, without pain. Roentgenographic examination of the chest revealed two typical sarcomatous nodules in the right lung; subsequent chest roentgenograms revealed numerous discrete metastatic nodules with ultimate death. The moral in this instance was the early certitude of a fatal outcome, thereby eliminating unnecessary surgical or medical treatment or deep roentgen-ray therapy.

Following right in line with a foregoing paragraph in which was mentioned the desirability of regional examination, two cases presenting some signs in common, namely, pains in both shoulders, typify the necessity for thorough roentgenographic study. In one case the chest showed a large aneurysm of the transverse aortic arch, while the other showed a marked hypertrophic spondylitis of the fifth, sixth and seventh cervical vertebrae, producing a pain syndrome of the brachial plexus. In both these instances, only the shoulders had been previously examined; and while this is quite proper, because it is sensible to examine the area apparently involved, one must look farther along the nerve trunks before a negative roentgen-ray report is justifiable.

A cough or so-called nasal catarrh should be given roentgenographic consideration from the standpoint of a sinus infection or some pulmonary lesion. It is a singular thing how often silent infections occur—called

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silent, because pain is absent. However, other symptoms, whether subjective or objective, are present and they should not be ignored.

One patient with thyrotoxicosis made a poor recovery until a so-called chronic catarrh proved, on roentgenographic examination, to be an antral infection. Silent sinus infections occur frequently.

Fractures present an interesting phase because some serious cases frequently occur with little or no pain. I have had two cases of what proved to be impacted fractures of the hip in which both patients walked into the office; one used a cane, the other had no assistance whatever, and both protested the needlessness of a roentgen-ray examination.

Fractures of the smaller bones occur often with little or no pain and very little disability, and it is legally and therapeutically unsafe not to have a roentgenographic examination.

It occasionally happens that a fracture of the lower end of the tibia, particularly a spiral fracture, is accompanied by a compensatory fracture of the upper end of the fibula. The latter is frequently overlooked because the major pain and apparent injury are at or near the ankle joint.

It is unwise to examine the skull roentgenologically over the scalp wound area only, because of the well known contracoup fractures which happen only too often; in spite of the presence or absence of tender points and visible contusions one should always use a four way examination, at least.

A common experience of all roentgenologists is the frequent occurrence of pathologic dental conditions without any local pain; this, of course, is diametrically opposite to the experience of a dentist, because ordinarily a patient will consult a dentist for dental aches. Hence it is quite understandable why it has taken a long time to drive home to the dental profession the actuality of dental infections as direct or contributory causes of disease processes elsewhere.

By way of an opposite illustration, a thorough roentgenographic examination of an acute fulminating osteomyelitis will be valueless, because a time interval is necessary to produce demonstrable bone changes; in the meantime, the surgeon will be obliged to make a clinical diagnosis and proceed with the necessary medical or surgical intervention, because waiting for roentgen-ray confirmation might be disastrous to the patient.

Intermittent claudication is a little nicety in roentgenographic diagnosis, because an arteriosclerosis of the blood vessels of the ankle and foot often can be demonstrated.

Hypertrophic arthritides may or may not be painful. It happens frequently that when both knees are roentgenographed the one showing the most changes might at the moment be painless, although considerable pain was present sometime past, while the knee that is most painful at the time shows little or no pathologic change. But if this knee is examined at a later period, distinct pathologic change may be evident, and pain may be considerably subdued or absent, or may continue to be severe.

Gastro-intestinal roentgenographic examinations offer a fruitful field explaining many abdominal aches. Anomalies in position are of such frequent occurrence that a diagnosis based on external topography is not permissible, because many of these variations can be determined prior to the laparotomy, thereby in a great measure displacing an exploratory operation. Abnormal peritoneal rotation, descent and fixation may occur, making the stereotyped diagnosis of appendicitis a somewhat obscure case. All roentgenologists have experienced the fact that an appendix might be anywhere in the abdomen, and as the case might even be one of complete transposition, depending on pain at McBurney's point will lead one into error.

An instance of multiple pathologic changes as determined roentgenologically explained a complete clinical history. The principal features as described and experienced by the patient were sudden pain in the lower left half of the chest coincidental with strenuous lifting, the presence of a previously unnoticed tumor in the left hypochondriac region, and dyspnea, which has continued to this day, a total duration of four months. Pain has been more or less continuous and is now accompanied by abdominal pains on the left side. Clinically, a diaphragmatic hernia was seriously considered. Roentgenologically, a chronic subdiaphragmatic pleurisy with adhesions was demonstrated, complicated by multiple diverticulitis of the ascending and descending colons. The cecum and the ascending colon were situated in the left iliac region, while the hepatic flexure was located in the customary area. The tumor mentioned earlier turned out to have been a lipoma; close questioning elicited the fact that it had been present for a long time, so it had no direct bearing on the present condition other than to confuse the issue.

In a case that illustrates the necessity for discretion, the patient complained of severe backache low on the right side; roentgenographically, a deformity of the third, fourth and fifth lumbar vertebrae was apparent; the right halves of the bodies were smaller than the left, especially the fourth; the right transverse process of the latter was small; a crow's beak osseous deposit about one-half inch in length protruded to the right, and articular facets appeared poorly developed. Clinically, the condition was diagnosed as relaxed ligaments with preternatural mobility. An Albee transplant was advised. The patient was exceedingly reluctant to have this done and wisely so, because an eventual roentgenologic diagnosis of chronic appendicitis was made and total relief obtained. The appendix, the terminal ileum, the cecum and the bladder wall were extensively involved in adhesions, which, when modified, released the peritoneal pull over the psoas muscle, thereby relieving the intense backache.

All roentgenologists have seen many cases in which pain or the absence of pain assisted in either proving or disproving a clinical diagnosis, which syndrome could be explained by a thorough roentgenologic examination, and while this paper, in a measure, appears inappropriate before this section, an occasional repetition or amplification seems desirable to bring before us the sureties, as well as the pitfalls, because in spite of the instruments of precision we now have, judgment and experience are enhanced by the unusual incident rather than by the usual.

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Local Epilepsy.—The symptoms of local irritation of the brain are generally, in contrast to those of destructive lesions, paroxysmal or episodal. All the evidence we possess goes to show that these symptoms occur only when the gray matter is involved, and never when the white matter is alone affected. Further, they appear mainly when the cerebral cortex is excited; we have no convincing evidence that they result from disease of the basal ganglia or of the gray matter of the brain stem or spinal cord, though epileptiform phenomena have been observed with disease and experimental excitation of the pons varolii.—Holmes, Gordon: *Lancet*, May 7, 1927.

SOME OBSERVATIONS REGARDING DIPHTHERIA IMMUNITY*

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During the earlier days of our experience with the guinea-pig test for diphtheria immunity, we were Schick testing and immunizing with toxin-antitoxin many children in various schools and institutional groups. Many comparative tests were made, some of the earlier ones having been previously reported.[1] Primary tests by the two methods were found to agree, except for discrepancies explainable by the influence of protein reactions in obscuring the correct reading of the Schick test. Later, through the accidental inclusion of some children who were Schick negative following toxin-antitoxin immunization, in a group having blood specimens taken, it was noted that some of these gave negative Schick tests and positive Kellogg tests. The latter test is gaged to detect antitoxin in the blood in quantities of one-thirtieth unit per cubic centimeter or more, the amount generally accepted, following the work of Schick, as protective. It is performed by adding to 0.1 cc. of the blood serum 0.1 cc. of a dilution of diphtheria toxin representing $\frac{1}{300}$ L + dose. The mixture is allowed to stand for the combination of toxin with antitoxin and is then injected into the shaved skin of a white guinea-pig. If the serum contains exactly one-thirtieth unit a red reaction will appear, but it does not go on to necrosis. If there is no antitoxin or if the amount was definitely smaller than a thirtieth, necrosis will result. Amounts larger than one thirtieth do not give any reaction at all.

The sharpness of reaction and quantitative accuracy of the method are due to the fact that the toxin for the test is measured on its L + or combining value with antitoxin and not on the toxic or minimal lethal dose value, as is the toxin for the Schick test. If the serum being tested should contain exactly one-thirtieth unit of antitoxin per cubic centimeter, the one tenth used in the test would contain $\frac{1}{300}$ unit. This $\frac{1}{300}$ unit will neutralize the $\frac{1}{300}$ L + of toxin used except for a margin of $\frac{1}{300}$ minimal lethal dose. This small amount will produce a red reaction, which stops short of necrosis, on the skin of the guinea-pig. If, however, the serum should contain, we will say, only one-sixtieth unit of antitoxin per cubic centimeter, half the toxin will be left free and this is a necrosing dose, as may be appreciated when consideration is given to the relation between the L + dose and the minimal lethal dose.

If a toxin containing 100 minimal lethal doses to the L + dose were used for testing, we would have in the foregoing example free in the mixture

$$\frac{\text{100 M. L. D.}}{\text{300 doses}} \div 2 = \tfrac{1}{6} \text{ M. L. D.}$$

A toxin with only a fifth of this minimal lethal dose value, which would be an extreme case, would still leave one-thirtieth minimal lethal dose free, a necrosing dose for the guinea-pig. Variations in the antitoxic content of serums, therefore, of only $\frac{1}{100}$ unit per cubic centimeter either way from the standard of one thirtieth are characterized either by necrosis or by absolute lack of reaction. The Schick test, also, is expected to give a negative reaction in the presence of one-thirtieth unit per cubic centimeter but not of much less than that; certainly not when the amount is as small as $\frac{1}{100}$ unit. It is performed by injecting intradermally one-fiftieth minimal lethal dose of toxin into the skin of the person tested, and a negative reaction, indicating immunity, has always been explained as being due to the presence of antitoxin in the circulating blood.

The occurrence cited, of negative Schick reactions in persons not showing antitoxin by the Kellogg method, has been noted only in persons, originally Schick or Kellogg positive, who have later received a course of toxin-antitoxin injections. The discrepancy in the comparative results of these two tests in certain persons raised the question of the true mechanism of the negative Schick test as well as of the immune status of these persons; in fact, it suggests that immunity to diphtheria may not rest solely on an antitoxic basis. The direct titration of antitoxin on the sensitive guinea-pig skin is so dependable and uniform that the question of the possible presence of a neutralizing quantity of antitoxin, notwithstanding the positive guinea-pig test, does not enter into consideration at all as an explanation for these aberrant Schick tests.

The state home for the feebleminded at Eldridge afforded a favorable field for investigation as the superintendent, Dr. F. O. Butler, had requested our aid in eliminating diphtheria from his institution and we had Schick tested all the inmates, about 1,600, preparatory to immunization. A group of seventy of those originally Schick positive, who were later immunized and then Schick tested seven months afterward and found negative, was selected for further testing by both methods. The negative Schick tests had been obtained fourteen months preceding this special test. Of the seventy individuals, all were found to be still Schick negative, but seventeen were Kellogg positive. While the latter test is adjusted, as already explained, to show whether a serum contains either more or less than one-thirtieth unit per cubic centimeter, quantities as small as $\frac{1}{100}$ are shown; and these seventeen positives all contained either no antitoxin or amounts less than $\frac{1}{100}$ unit. Ten of these seventeen persons had required two series of immunizations before giving the negative Schick reaction which placed them in our series.

The high percentage of this group requiring a second series of immunizing injections is accounted for by their ages. Our records of immunizations show that, in the age group of 16 and over, 45 per cent require two series of injections of toxin-antitoxin. The parallel tests were made in May, 1925. In March, 1926, ten were given another parallel test, three showing negative by both tests, the others continuing positive by the Kellogg and negative by the Schick method. In May, 1926, six of the subjects (numbers 1, 2, 5, 6, 14 and 16) were tested and four were positive by the Kellogg and also by the Römer method, the latter being adjusted to show $\frac{1}{500}$ unit of antitoxin. Of these four, three at the same time showed $\frac{1}{1000}$ unit of antitoxin by the Römer test and one showed not even this trace. The other two had a few days before been given, through a misunderstanding, a series of toxin-antitoxin injections and were now negative by all tests. The Römer method was applied in an effort to determine whether small amounts of antitoxin might be present, even though too little to account for a Schick negative reaction. This proved to be the case in three, but not in the remaining one of the four that were tested for $\frac{1}{1000}$ unit.

* Read before the section on Pathology and Bacteriology of the California Medical Association, Los Angeles, April 28, 1927.

1. Kellogg, W. H.: A Test for Diphtheria Immunity and Susceptibility, J. A. M. A. **78**: 1782-1783 (June 10) 1922. The Intracutaneous Guinea-Pig Test (Kellogg) for Human Susceptibility and Immunity to Diphtheria, ibid. **80**: 748-750 (March 17) 1923.

The table shows the record of the six individuals just referred to, from the date of the second parallel test down to the end of the record. To test the observation of Glenny and Allen [2] and O'Brien [3] that even as small a secondary stimulus as the Schick test will sometimes give rise to titratable amounts of antitoxin in those individuals previously given toxin injections, all this group except subject 14 were again bled for tests and Schick tested at the same time, Oct. 11, 1926. The one that in the preceding test had given a Kellogg negative (subject 6) had lost his antitoxin, two of the others showed some antitoxin but less than one thirtieth and the other two continued as before, Kellogg positive and Schick negative. Seven days later these two were still Kellogg positive, subject 6 had become negative again, while subject 16 tested as before. The third bleeding was done thirteen days later, October 31, at which time subjects 1 and 2 had become negative, 5 and 6 continued negative, and 16 was also definitely negative, thus confirming the English authors. As shown by the table, subjects 1, 2 and 16 had in the meantime received one dose of toxin-antitoxin. A fourth guinea-pig test three months later showed subject 2 still negative, subject 1 with about $\frac{1}{100}$ antitoxin and subject 6 definitely positive; subject 16 had about $\frac{1}{100}$ unit antitoxin. This shows that the presence of free antitoxin in this class of persons is temporary, although it seems possible by persistent treatment to establish a more permanent antitoxic immunity. Another group was selected, consisting of persons, twenty-eight in all, who never had been Schick tested but who had been identified as nonimmunes by the Kellogg test and treated with two series of toxin-antitoxin injections following two successive positive Kellogg tests. All this group gave negative Schick tests, April 24, 1926, and all but five, adults, gave negative Kellogg tests. The five positives were given two days later 1 cc. of toxin-antitoxin mixture; blood was taken nine days later and tested by both the Kellogg and the Römer ($\frac{1}{500}$) methods. The Römer test was negative in all, showing at least $\frac{1}{500}$ unit of antitoxin; the Kellogg negative in two, showing at least $\frac{1}{30}$ unit; it showed about $\frac{1}{100}$ in another, and was definitely positive in the remaining two. The stimulating action of a small quantity of toxin was again shown, and the percentage of persons in the group so reacting was about the same as in the larger group first discussed.

Record of Six Persons Selected from the Original Group *

	March, 1926		April, 1926,	May, 1926			Oct. 11, 1926		Oct. 18, 1926,	Oct. 22, 1926,	Oct. 31, 1926,	February, 1927	
	Schick	Kellogg	Toxin-Antitoxin	Kellogg	Römer 1/500	Römer 1/1000	Schick	Kellogg	Kellogg	Toxin-Antitoxin	Kellogg	Kellogg	Römer 1/500
1	—	+	..	+	+	—	—	+	+	1 dose	—	± (1/100)	—
2	—	+	..	+	+	—	—	+	+	1 dose	—	—	—
5	—	+	3 doses	—	—	..	—	—	..	..	—	..	..
6	—	+	4 doses	—	—	..	—	+	—	..	—	..	..
14	—	+	..	+	+	+	..	..	..	..	..	..	..
16	—	+	..	+	+	—	—	± (1/30)	± (1/30)	1 dose	—	± (1/100)	..

* The plus sign means reaction on the guinea-pig, indicating no antitoxin in the amount tested for. The minus sign means no reaction, therefore antitoxin present.

It is evident that a properly performed Schick test with potent toxin may at times result negatively in persons who have no, or at most only traces, of antitoxin in their blood. We believe that such persons have a form of latent immunity, being capable of quickly producing antitoxin under the stimulus of exposure to toxin. The question arises as to the explanation of the negative Schick test in these latently immune individuals; is it due to a rapid local production of antitoxin, preceding a general outpouring into the blood stream, or is it possibly not a toxin-antitoxin reaction at all? We do not have an answer at present, but it may be observed that these persons may possibly be immune entirely aside from their latent ability to produce antitoxin. Coca, Russell and Baughman,[4] in discussing the natural immunity of the rat to diphtheria toxin, suggest an analogy to the immunity of ox cells to cobra hematoxin in the presence of electrolytes with vulnerability in isotonic sugar solutions without electrolytes, the difference being apparently due to a physical condition of the cells permitting passage of the toxin in one case but not in the other. The observation has more than once been made [5] that carriers of virulent diphtheria bacilli may be Schick positive, showing that they are protected in some way other than the presence of antitoxin in the blood. This other mechanism may be a mere matter of integrity of the epithelial layer or it may depend on some form of specific local cellular immunity, as mentioned. Attempts were made to demonstrate the presence of antitoxin in the cutaneous tissues of these subjects by shaving off layers of skin, about a square inch from each, grinding it up with sand and salt solution and testing for antitoxin on guinea-pigs, but without success. Other tests were made by macerating the ground skin with dilute solutions of toxin to see whether contact with epithelial cells would in some way inactivate the toxin, but this also was a failure. One of us [6] noted the occurrence of varying reactions to the Schick test in the same individual at the same time; a group of eleven adults had two Schick tests placed on each arm, one above and one below the elbow. In one case a protein reaction was noticeable on the forearm, with no reaction at all on the arm. In two cases, very severe positive reactions occurred on the forearm and a very slight reaction on the arm. In another person this arrangement was reversed. Variation in susceptibility to cutaneous reactions in different areas of body surface was therefore shown and the interesting question arises, What would be the result of multiple Schick tests on various parts of the bodies of the individuals who contributed the material for this discussion?

The peculiar fact that persons who are naturally Schick negative (primary Schick tests), assuming of course that the operator is experienced and the toxin potent, are always also Kellogg negative and that negative Schick reactions in the absence of free antitoxin occur only in those artificially immunized, suggests a difference in the mode of acquisition of antitoxin in the

2. Glenny, A. T., and Allen, K.: The Schick Dose of Diphtheria Toxin as a Secondary Stimulus, J. Hyg. **21**: 104 (June) 1922.

3. O'Brien, R. A.: Immunity Produced by the Schick Test, J. Path. & Bact. **29**: 320, 1926.

4. Coca, A. F.; Russell, E. F., and Baughman, W. H.: The Reaction of the Rat to Diphtheria Toxin, J. Immunology **6**: 387 (Nov.) 1921.

5. McGuire, P. F., and Hitchens, A. P.: Epidemiologic Survey in a Citizens' Military Training Camp, J. A. M. A. **80**: 665 (March 10) 1923.

6. Kellogg, W. H.: Should the Schick Test Be Abandoned? Am. J. Pub. Health **15**: 868-872 (Oct.) 1925.

two classes. In the latter group, free antitoxin is a variable factor, disappearing quickly only to reappear on occasion of a new stimulus. It would seem that if persons who naturally are Schick negative had acquired their antitoxin by exposure to small doses of the antigen over a period of time, they should behave in the same way and the fact that they do not may mean that their antitoxin is a physiologic property akin to that of the natural antibodies of ambocepter nature so universally present in animal bloods.

SUMMARY

1. The Schick test and the guinea-pig test for diphtheria immunity give parallel results in primary tests.

2. In persons who have been immunized with toxin-antitoxin and a negative Schick test obtained, some show no antitoxin by the Kellogg method; in our series it was from 20 to 25 per cent.

3. Most of these show traces when tested for small amounts by the Römer method, but a few do not show any at all.

4. These persons are latently immune, because they quickly develop antitoxin in titratable amount if given a secondary stimulus in the form of a single injection of toxin-antitoxin and at times even as small a stimulus as the Schick test.

5. There is an essential difference in the permanence of the free antitoxin in the circulating blood of the naturally immune and those artificially immunized. This difference, together with the fact that the naturally immune as shown by the Schick test always have free antitoxin while the artificially immune do not always have it, suggests that natural immunity may not exist solely by reason of exposure to infection, but may be, in part at least, a physiologic occurrence.

THE BACTERIOLOGY OF WHOOPING COUGH *

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In 1906, Bordet and Gengou [1] succeeded in cultivating *Bacillus pertussis* from cases of whooping cough. Since their pioneer discoveries, isolated reports of a few cases each have been published, but in this country routine cultures in cases of whooping cough have had little vogue.

The work of Meyer, Chievitz [2] and their co-workers at the Danish Serum Institute has demonstrated conclusively the value of bacteriologic methods in the diagnosis of this disease, and their studies, now extending over a number of years, have been too little appreciated in the United States. In a report covering 1,106 cases they were able to isolate the causative organism in 970, a percentage of 87.7 isolations. Dividing these cases into groups according to the stage of the disease at the time cultures were taken, their success may be tabulated as shown in table 1.

In the United States, reports on the bacteriology of the disease have been few. Povitzky [3] has isolated eighteen cultures from fifty-five patients, the majority of the cultures being obtained in the early weeks of the disease. Wollstein [4] succeeded in obtaining five positive cultures in twenty cases. Williams, Wilson, and Mishulow [5] obtained twenty-seven positive cultures in a series of 187 cases.

TABLE 1—*Percentage of Successful Isolation of Causative Organism of Whooping Cough by Danish Workers*

Catarrhal period	79%
First week of the whoop	57%
Second week of the whoop	61%
Fourth week of the whoop	40%
After fourth week of the whoop	9%

During the winter and spring of 1925-1926 the Commission for the Study of Whooping Cough had ample opportunity to study the disease from many angles at the clinic established at the On-Shore Department of the Boston Floating Hospital. The purpose of this report is to give the results there obtained so far as they concern the bacteriology of the disease.

We feel constrained to set forth a somewhat detailed description of the medium and of the technic employed in this study, as some previous articles have been lacking in a presentation of these important details, while others have reported mediums which in the light of present knowledge are unsatisfactory.

CULTURE MEDIUM

The medium which we employed throughout this study was the original Bordet-Gengou medium, with certain modifications that seemed advisable from the previous experience of one of us. The following method of making this medium was employed:

Five hundred grams of potato is passed through a coarse meat grinder and added to 1,000 cc. of water and 40 cc. of glycerin. This mixture is shaken well and placed in an Arnold sterilizer for one hour. The resulting extract is pressed through cheese cloth in a small press, and to every 500 cc. of the resulting fluid 1,500 cc. of 0.6 per cent salt solution and 50 Gm. of agar are added. The medium is sterilized in the Arnold steam sterilizer for one hour periods on three successive days.

The fractional method of sterilization was substituted for the more destructive process of autoclaving, as the latter seemed to decrease to a greater extent the growth promoting vitamin substance of the potato. Comparative plates made with mediums sterilized by these two methods showed a more luxuriant growth on the Arnold sterilized medium.

Following the third heating, the medium was cooled to 42 C., from 5 to 10 per cent of blood was added, and, after a gentle mixing, thin plates were poured. Fresh citrated horse blood was used in all our work. Rabbit blood and human blood have, in the hands of some, proved more effective enriching substances, but their use in such an extended series as ours seemed impracticable. It was found that the best results were obtained by the use of blood not more than 72 hours old. When the blood was kept for a longer time even at icebox temperature, not only did the plates hemolyze sponta-

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1. Bordet, J., and Gengou, O.: Le microbe de la coqueluche, Ann. de l'Inst. Pasteur. **20**: 731-741, 1906.

2. Chievitz, I., and Meyer, A. H.: Recherches sur la coqueluche, Ann. de l'Inst. Pasteur. **30**: 503-524 (Oct.) 1916; Further Investigations on Whooping Cough, Ugesk. f. Læger. **78**: 1443-1456 (Aug. 24) 1916. Meyer, A. H.: Communications on the Examinations for the Diagnosis of Whooping Cough at the Serum Institute of the State, Acta. Paediat. **1**: 99-104 (March) 1921. Researches on Whooping Cough in the State Serum Institute, Ugesk. f. Læger. **83**: 523-525 (April) 1921. Madsen, T.: Whooping Cough: Its Bacteriology, Diagnosis, Prevention and Treatment, Boston M. & S. J. **192**: 50-60 (Jan.) 1925.

3. Povitzky, Olga R.: Improved Methods for the Isolation and Later Cultivation of B. Pertussis, J. Infect. Dis. **32**: 8-21 (Jan.) 1923.

4. Wollstein, Martha: The Bordet-Gengou Bacillus of Pertussis, J. Exper. Med. **11**: 41-54, 1909.

5. Unpublished report, cited by Povitzky.

neously, but the growth of *Bacillus pertussis* was considerably less luxuriant than on plates made with fresh blood. For further studies we should recommend that defibrinated blood take the place of citrated blood, for in dealing with an organism so fastidious as *Bacillus pertussis* the sodium citrate may have an inhibitory effect even in the high dilutions practically employed.

Before the addition of blood, the reaction of the Bordet-Gengou medium ranges from p_H 5.8 to p_H 6.4. The optimum reaction for growth is said by Povitzky to be at p_H 5.0, with the limits of the acidity favorable for growth from p_H 4.4 to p_H 6.1. Povitzky added blood to her medium to make a final concentration of 25 per cent. Referring to the titration of the medium, she states that "these tests were made before the addition of blood, and the reaction may, therefore, have been changed slightly by the blood." That this change is more than slight will be seen by an examination of table 2, in which we have given the results of titration of the medium after the addition of serum which, in its buffering action, is quite comparable to whole blood. Starting with the Bordet-Gengou medium adjusted to various degrees of acidity, serum to make a final concentration of 5, 10, 25, and 50 per cent was added, and the reaction again determined by the colorimetric method.

TABLE 2.—*Results of Titration of Medium*

Reaction of the Medium Before the Addition of Serum	Reactions After the Addition of Serum			
	50%	25%	10%	5%
p_H 7.0	7.4	7.4	7.3	7.2
Unadjusted (6.2)	7.3	7.2	7.0	6.8
5.5	7.3	7.1	6.8	6.6
5.0	7.2	7.0	6.7	6.4
4.5	7.1	6.8	6.6	6.2

From table 2 it can be seen that the optimum reaction range for growth in the final medium is not p_H 4.4 to p_H 6.1 but rather p_H 6.6 to p_H 7.3. This reaction is approximated with sufficient accuracy by adding to the unadjusted Bordet-Gengou medium enough blood to make the final concentration 5 or 10 per cent. If an equal volume of blood is added, as was at first recommended by Bordet, it matters little whether the initial p_H is 4.5 or 7.0; the final reaction will be above p_H 7.0.

METHODS OF OBTAINING CULTURES

The methods of taking cultures deserve a word of mention. Nose and throat cultures taken in the usual way have not, in our hands, proved of value. In no case were we able to obtain a growth of *Bacillus pertussis* from material from these sources although cultures were taken from more than a hundred whooping cough patients and an even larger number of suspects. There are two effective methods of obtaining cultures, each of which has its advantages and its disadvantages. One of these methods consists in inoculating Bordet-Gengou plates with the sputum. The sputum is collected in a clean cup or other convenient receptacle and is carefully inspected. One soon learns to discriminate between the thin mucus from the mouth and throat and the thicker, more tenacious exudate which is expelled from the trachea and bronchi, and which is the material desired for transplantation. A bit of this thick mucus is taken up on a platinum loop and washed thoroughly in three baths of sterile physiologic sodium chloride solution. After the third washing the sputum is plated on Bordet-Gengou plates, care being taken to insure a light and fairly even distribution of the material over the entire plate.

The second successful method of obtaining cultures is to hold an open plate of the medium about 5 or 6 inches in front of the patient's mouth during a paroxysm of coughing, rotating the plate slowly to insure an even distribution of the expelled droplets on the surface of the medium. This method of obtaining cultures was introduced by the Danish workers, and in their hands, as well as in ours, has proved most effective. It is a method that might well lend itself to trial in respiratory diseases other than whooping cough.

The direct plating of the washed sputum has the advantage that it is usually a more reliable index as to the presence or absence of *Bacillus pertussis* than is the cough plate method. Table 3 gives the results in those cases in our series which were simultaneously investigated by the two methods.

TABLE 3.—*Results with both Methods of Plating*

Cough plate positive, sputum positive	29
Cough plate positive, sputum negative	3
Cough plate negative, sputum positive	14

Without explanation the figures in table 3 are perhaps a bit misleading, because many of our cough plates were not sufficiently exposed. The psychic influence of a bright red plate suddenly held in front of a child's face sometimes checks the paroxysm before a satisfactory exposure can be made. Confirmation of this influence is found in the request of several mothers who came to the clinic asking that their children have the "red glass" treatment. Many of our cough plates which we realized at the time were poorly exposed, and so labeled them, are included in the table.

The cough plate method, on the other hand, possesses several distinct advantages. Aside from the economy in time and materials, it has the added value of being applicable in cases in which sputum cannot be obtained. Infants and young children are prone to swallow their sputum, and in the cases coming to the clinic in the catarrhal period there is no expectoration, so that in these cases the cough plate method is of prime importance. Occasionally, too, children who are old enough to cooperate can be made to inoculate a plate in a satisfactory manner by a series of deep voluntary coughs.

Stained smears of the washed sputum are of little value. *Bacillus influenzae*, which is present as a secondary invader in many cases of whooping cough, cannot be differentiated from *Bacillus pertussis* in such a preparation. As a matter of interest, chocolate agar plates and clotted rabbit's blood were seeded with washed sputum from patients with whooping cough. In twenty-two of a total of forty-six cultures so made (48 per cent), *Bacillus influenzae* was found to be present.

Bordet-Gengou plates seeded by either of the foregoing methods are incubated at 37 C. for varying lengths of time. In twenty-four hours, growth is usually not visible to the naked eye. In forty-eight hours there may be seen tiny, pearly gray, translucent colonies, raised above the surface, regular in outline, resembling a minute drop of mercury. There may also be a faint, hardly discernible area of hemolysis around the colony. After seventy-two hours' incubation the colonies usually double in size and there is no difficulty in making out the surrounding hemolyzed area. The colonies are translucent, in contradistinction to those of saprophytic organisms, which are opaque and brownish. Rarely, the colonies of *Bacillus pertussis* appear only

after four or five days' incubation, so that daily examination of the plates for a period of five days is necessary before a culture can with certainty be pronounced negative. This long period of incubation is troublesome, and attempts have been made to curtail this in order that reports of cultures might be available in a shorter time. Slight alterations in the constituents of the medium, additions of ascitic fluid and other enriching substances, incubation of the cultures in a partial atmosphere of carbon dioxide, and incubation under partial anaerobiosis have all been tried without success.

Cultures taken in the catarrhal period or during the first week of the whoop will usually show a large number of characteristic colonies per plate. Later in the disease the number of organisms gradually diminishes, and only occasional colonies appear on the plates.

As a means of identification of suspected colonies on the primary plates, two general methods are applicable. The organism is transplanted to Bordet-Gengou medium, to chocolate agar, and to plain infusion agar. If the organism is a gram-negative bacillus of proper morphology and grows only on the Bordet-Gengou medium, it is *Bacillus pertussis*. Another simple method of final identification is a microscopic agglutination test with pertussis antiserum, normal serum being used as a control. This can be done by fishing a single colony, emulsifying it in salt solution, and mixing this emulsion with a drop of each of the serums diluted 1:10 in the case of the normal serum, and 1:100 in the case of the specific antiserum.

RESULTS OF THE APPLICATION OF THESE METHODS

From October, 1925, to June, 1926, we examined cultures from 1,115 suspected cases, contacts, and patients with whooping cough. Most of these cultures were taken at the clinic of the Boston Floating Hospital and in its wards. Several local pediatricians sent us cultures for examination, and we investigated several school and institutional outbreaks. Of these 1,115 cultures, 259, or 23 per cent, showed the presence of *Bacillus pertussis*. It must be borne in mind that many of the cases the data from which we have included in the foregoing figures subsequently proved to be respiratory diseases other than whooping cough. From this series of cases complete records are available on 533 cases of proved whooping cough, 219 of which showed *Bacillus pertussis*. We have been able to isolate the organism as early as twenty-four days before the onset of the whoop (three cases). The latest positive culture was taken on the sixtieth day of the disease or the thirty-sixth day of the whoop.

In table 4 these figures are tabulated according to the stage of the disease in which the cultures were taken. Although the percentage of positive cultures is somewhat less than in the reported cases of Meyer and his co-workers, in the two series the general downward trend of the number of positive cultures as the disease progresses is the same.

As shown in table 4, *Bacillus pertussis* has been isolated from a number of patients who never whooped. Ten of these patients were seen at the clinic, while nine were patients of local physicians who had kindly taken cultures and brought them to our laboratory for examination. Just as we have "scarlatina sine exanthemate" and cases of other infectious diseases which are never diagnosed, either because of their mildness or because the symptoms have been masked by prophylatic vaccination or serum treatment, so we have in children exposed to whooping cough a mild type of the disease which might well pass as a common cold were bacteriologic studies not instituted.

A word of warning concerning the use of pertussis vaccine as a prophylactic may well be interpolated here. Vaccine treatment, if instituted early in the incubation period, will in many cases, prevent the disease entirely. In others the disease manifests itself, as in the catarrhal stage of whooping cough, by the symptoms of a common cold. These children do not whoop, and the parents, thinking that the disease has been prevented, allow the child its accustomed freedom at a time when, as demonstrated by bacteriologic studies, it is a potential source of infection to others.

Three cases have been purposely omitted from the discussion in the preceding paragraph as they rightfully deserve separate mention. These patients had had whooping cough two, four and five years previously and came to the clinic because of severe colds following exposure to other members of the family who had come down with the disease. Cultures taken from all three of these patients showed *Bacillus pertussis*. As they began to cough from six to thirteen days after the first exposure, we have assumed that we were dealing with true instances of second attacks, and not with carriers. Although we cannot offer statistics at this time, we are of the opinion that second cases of whooping cough are not the rarity that clinicians would have us believe, and that when second attacks occur they usually take a mild form, sometimes without the characteristic whoop. In this connection, five mothers who had colds at the time their children were being treated in the clinic were examined for the presence of *Bacillus pertussis*. In one of these patients, who had had whooping cough twenty-two years before, we were able to isolate an almost pure culture of the organism. During the second attack she had a troublesome cough but never whooped or vomited. She was the probable source of infection in her two children, who had suggestive coughing attacks at the time of their clinic visit but did not whoop till four and seven days later.

TABLE 4.—*Percentage of Successful Isolations of Causative Organism of Whooping Cough by Authors*

Stage of the Disease	Number of Patients Examined	Number of Positive Cultures	Percentage of Positive Cultures
Catarrhal period	91	54	59
First week of whoop	90	48	53
Second week	207	69	33
Third week	47	18	38
Fourth week	31	5	15
Fifth week	16	1	6
After the fifth week	25	1	4
Patients who never whooped	23	23	..
Total	533	219	Average, 41

PERIOD OF INFECTIVITY

All clinicians are agreed that the most infectious period is during the catarrhal stage of the disease. Generally speaking, none of our quarantine regulations cover this period, which, from an epidemiologic point of view, is more important than any other. In this country, quarantine of whooping cough usually lasts for four weeks after the whoop manifests itself, and in some towns local regulations require that the patient must have stopped whooping before being released from quarantine. All these requirements are based on the empiric observations that new cases of the disease do not develop following a period of isolation of four

weeks or longer. We feel that in many instances this lengthy quarantine is unjust and irrational, failing as it does to protect the community from infection during the catarrhal stage, and keeping the patients needlessly isolated when they are no longer a source of danger. In theory at least, a quarantine period of thirty days from the onset of the first catarrhal symptoms would be ideal. Such a program, could it be practically instituted, would control 94 per cent of all possible spreaders of the disease, whereas present regulations control only about 62 per cent or less. That such a program is not impossible has been demonstrated by the town of Needham, Mass., which during the winter of 1925-1926 conducted a school for whooping cough patients, and another for contacts who had not manifested symptoms of the disease.

Release cultures as taken in diphtheria might play a rôle in the curtailment of an overlong quarantine period in hospital and institutional practice. Because of the technical difficulties involved, particularly the necessity of employing freshly prepared medium, we do not at this time recommend its general use, but in the case of contagious disease hospitals it would prove a valuable aid. To illustrate this point we offer the following data: In twenty cases of whooping cough admitted to the wards of the On-Shore Department of the Boston Floating Hospital, in which we were able to take

TABLE 5.—*Cultures Obtained in Ten Cases of Whooping Cough*

Case	Cultures Positive*	Cultures Negative*
1	−5, −3	1, 10
2	−4	13
3	−5	1, 6, 13
4	−2	6, 8
5	−2, −1, 1	11
6	−24, −22	−6, −3
7	−24	−9, −2
8	−24	−9, −2
9	−3	1, 6
10	−16, −9, −7	2, 5

* The figures in these columns refer to the number of days before or after the whoop. Thus −5 becomes five days before the whoop, and 10 becomes ten days after the whoop began.

repeated cultures under ideal conditions, no negative cultures were obtained till the eighth day of the whoop. After the eighth day the positive cultures became fewer, and after the seventeenth day positive cultures could not be obtained.

Analysis of the clinic cases enables us to select fifty-one patients from whom several cultures were taken at various stages of the disease. The observations do not lend themselves to tabulation, but they show that children previously shown to harbor *Bacillus pertussis* may give negative cultures early in the disease. Table 5 presents the data in ten of these cases in which the cultures were positve in the catarrhal period and subsequently became negative.

Twelve cases yielding positive cultures up to the seventh day of the whoop became negative on an average on the fourteenth day of the whoop.

Twenty-two cases positive up to the fourteenth day of the whoop became negative on an average on the twentieth day of the whoop.

Five cases positive up to the twenty-first day of the whoop became negative on an average on the twenty-sixth day of the whoop.

While the infectious period is in only a small percentage of cases more than thirty days from the onset of the disease, or more than twenty days from the time when the whoop manifested itself, we feel that in the majority of cases the infectious period may be considerably less than this maximum and can be determined only by carefully conducted bacteriologic studies. No method has as yet been devised to measure the virulence of *Bacillus pertussis* or the susceptibility of the patient to this organism. When we possess such information, much can be accomplished. It may well be that organisms isolated in the later stages of the disease are incapable of infecting a susceptible individual, as attenuation of the virulence of organisms in the animal body is by no means rare.

CLINICAL APPLICATION OF BACTERIOLOGIC METHODS

During an epidemic the clinician is often faced with the problem of deciding whether a child with catarrhal symptoms has whooping cough or is merely a victim of a common cold. Heretofore the only laboratory aid in making a tentative diagnosis of the disease has been the leukocytosis and the increase in lymphocytes which in many cases accompanies the catarrhal stage of whooping cough. On the basis of single cultures taken for diagnostic purposes early in the disease, we have convinced many local physicians of the value of bacteriology as an aid to diagnosis. If cultures taken from suspected cases show *Bacillus pertussis*, the diagnosis is clear. Should the culture prove negative, there are three alternatives. Either the patient is not suffering from whooping cough, the organisms present have not grown on the plates because of old or faultily prepared medium, or the medium has not been properly exposed. To eliminate the latter sources of error only freshly prepared plates should be used, and cultures should be taken with careful regard to technic on three successive days, preferably in the evening, when, in whooping cough, the cough is most frequent and pronounced. If the three cultures taken in this manner are negative, we believe it safe to assume that the condition is not whooping cough.

We have attempted to show that the infectious period in whooping cough varies considerably depending in turn on other varying factors such as the virulence of the organism and the resistance of the host. The problem of establishing in each individual case the length of the period of infectivity is important, not only from the point of view of the patient, but in establishing more effective quarantine regulations for the control of the disease. Cultures should be taken at weekly intervals throughout the disease, and when a negative culture is secured, it should be checked by three cultures taken on successive days. If these are negative, the patient may safely be released from quarantine.

SUMMARY

At the risk of repetition, we wish to reiterate several important facts. Mediums used must be freshly prepared and must be properly inoculated, either by seeding with carefully washed sputum or directly by means of the cough plate method. Single negative cultures are frequently misleading, and repeated cultures on three successive days are to be recommended, not only in establishing the diagnosis in the catarrhal stage of the disease, in second cases, and in patients who never whoop, but also in determining the length of the period of infectivity and the possibility of release from quarantine. Only by such studies can controversial points concerning the period of infectivity be clearly established, and our present somewhat chaotic knowledge of the disease systematized and coordinated.

CONCLUSIONS

Cultures taken from whooping cough patients are an added aid in the early diagnosis of the disease. The methods employed in an intensive study conducted by the Commission for the Study of Whooping Cough show that they have an even wider range of usefulness than was at first expected. Carriers, second cases, and suspected cases in which the patients never whoop, all of which would otherwise remain undetected, may be diagnosed by bacteriologic studies. During the catarrhal stage of the disease, positive cultures may be obtained with considerable regularity. As the disease progresses, there is a coincident decline in the percentage of positive cultures. It is suggested that the existing quarantine requirements be so changed as to include the catarrhal stage of the disease, and that the termination of this quarantine period be determined by release cultures as is the common practice today in diphtheria.

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STUDIES ON VARICELLA

AGE AND SEASONAL INCIDENCE, RECURRENCES, COMPLICATIONS AND LEUKOCYTE COUNTS *

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AND
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Varicella presents little difficulty in diagnosis under ordinary circumstances. Our experience, however, has led us to believe that confusion of the disease with variola occurs often enough to warrant the presentation of certain data which we have derived from a statistical study of 775 cases of varicella admitted to the contagious diseases department of the Cincinnati General Hospital from 1913 to 1926.

AGE

A point not sufficiently appreciated, although occasionally mentioned in the literature, is the number of adults who contract the disease. Of the 775 cases of our series, 1.4 per cent occurred in patients under 6 months of age; 11.7 per cent in those from 6 months to 2 years; 36.4 per cent in those from 2 to 6 years; 24.2 per cent in those from 6 to 12 years; 6.8 per cent in those from 12 to 20 years, and 19.4 per cent in those above 20 years. Of the eleven cases occurring in infants under 6 months of age, the distribution was as follows: In one the eruption was present at birth, the mother suffering from the disease; one occurred at 3 weeks of age; two at 1 month; two at 3 months; one at 4 months; two at 5 months, and in two the exact age was not known, although the infants were only a few months old. Of the 150 cases in persons above 20 years of age, 118 were in patients between 20 and 30 years of age; twenty-six in those between 30 and 40 years, and six in persons over 40 years, the oldest being 55 years of age. The large number of adults in this series does not give a true estimate of the age incidence of varicella. Many of these patients were sent to the hospital with a diagnosis of variola, and a few were nurses, physicians and attendants who contracted the disease on exposure in the hospital. The figures do serve to illustrate the frequency with which the disease may be contracted by susceptible adults.

SEASONAL INCIDENCE

In the 775 cases, the seasonal distribution was as follows: January, 11.2 per cent; February, 14.7 per cent; March, 13.3 per cent; April, 9.5 per cent; May, 8.8 per cent; June, 7.2 per cent; July, 4.1 per cent; August, 3.2 per cent; September, 5.4 per cent; October, 3.7 per cent; November, 9.3 per cent, and December, 9.4 per cent. These figures show only the expected greater number of cases in the winter months, 67 per cent of them occurring in the six month period beginning in November and ending in April.

PREVIOUS ATTACKS

In the entire group of 775 cases, there were only nine in which it was possible to obtain a previous history of varicella. The ages of these patients at the time of the first attack were as follows: 2 years, one; 5 years, one; 7 years, one; 9 years, two; 12 years, one; 14 years, one; 19 years, one, and 21 years, one. None of them were observed by us except during their second attack. Recurrence of varicella is certainly rare, although occasional cases are reported. Some physicians of large experience have never seen a second attack of the disease.

COMPLICATIONS

The following complications occurred once: nephritis, pharyngitis, laryngitis, bronchitis, corneal ulcer, parotitis, ileocolitis and streptococcus meningitis. The case of laryngitis was so severe as to require intubation. There were two cases each of erysipelas, adenitis, conjunctivitis and cellulitis. Three cases were complicated by tonsillitis, four by bronchopneumonia, fourteen by furunculosis and sixteen by otitis media.

TABLE 1.—*Summary of Leukocyte Counts*

Age Group	Leukocytes on First 3 Days; Number of Counts	Highest Count First 3 Days	Lowest Count First 3 Days	Percentage Having Leukocytosis	Percentage Having Leukopenia	Leukocytes on Fourth to Ninth Days; Number of Counts
Birth to 2 years	15,050 (27)	24,000	7,000	63 (over 12,000)	37 (under 12,000)	....
2 to 6 years	11,585 (65)	32,300	5,500	54 (over 10,000)	46 (under 10,000)	(4) 13,300
6 to 12 years	9,515 (44) 1st day 8,207 2d day 9,110 3d day 11,230	20,350	3,400	41 (over 9,000)	59 (under 9,000)	11,750 (3)
12 to 20 years	7,260 (22) 1st day 6,185 2d day 7,040 3d day 8,550	12,200	4,000	41 (over 7,500)	59 (under 7,500)	8,975 (4)
20 years and over	7,260 (59)	15,150	3,000	60 (over 6,000)	40 (under 6,000)	8,680 (9)

MORTALITY

Only two deaths occurred in this series of 775 patients. One was in a child who developed streptococcus meningitis following furunculosis, and the other child (not included in the list of complications) contracted varicella while suffering from a tuberculous bronchopneumonia.

LEUKOCYTE COUNTS

The leukocyte counts were made to a large extent in the first week of the disease, this being dated from the

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appearance of the eruption. For the purpose of comparison with normal counts, it is necessary to make a division according to age groups. To avoid making this report cumbersome the counts on the first three days and then those taken later will be summarized, the counts on individual days being noted only where there is any significant difference. It may be stated here that a review of the literature [1] suggests that there is a normal count or a leukopenia in the first week of the disease and often during the second. Some authors have stated that a lymphocytosis exists throughout the course of the disease.

Table 1 is a summary of 237 counts, and shows the changes in the total number of leukocytes. In infancy the average leukocyte count was about 3,000 above normal in the first three days of the disease, but at other ages, with the exception of adult life in which there was possibly a slight increase in the number, the average count was approximately normal. In the age group between 6 and 20 years the leukocytes, which were normal on the first day, rose to about 3,000 above normal by the third day. Fifty-four per cent of the patients, when studied individually, had leukocytosis in the first three days, the remainder having leukocyte counts below the average normal. From the fourth to the ninth day there was a slight leukocytosis in all age groups amounting from about 2,000 to 3,000 above normal.

Table 2 shows a summary of 221 differential leukocyte counts. There was no significant difference of any diagnostic importance, as the averages fell within the approximate normal limits for the various age groups. In individual cases there was wide variation from the average, but it was not possible to correlate any particular distribution of the different types of cells with such factors as severity of the disease, extent of the eruption or the like. In some cases we have found a large number of cells which appear to be of the nature of histiocytes. These we have not found regularly, and in the table they are included as large mononuclear cells.

It is difficult to interpret minor changes not only in differential counts but also in the total leukocyte count because of the definite variations that occur during the day. We are at present at work on the vacillation of counts that may occur in the course of twenty-four hours. One of us [2] has stressed this point and the necessity of its consideration in evaluating leukocyte counts, and it has been emphasized by others, especially by Sabin.[3]

SUMMARY

Many adults will develop varicella if exposed to it and if not protected by the immunity conferred by a previous attack. Varicella occurs in young infants and may be congenital, the virus being transmitted from the mother who is suffering from the disease. In the present series, 775 cases occurred in patients from 1 day to 55 years of age.

Varicella is somewhat more frequent in the winter months.

Of 775 patients, nine gave a history of a previous attack of varicella.

Complications are unusual and nearly always mild, the most frequent furunculosis and otitis media.

TABLE 2.—*Analysis of Different Leukocyte Counts*

	First Three Days					Fifth to Seventh Days				
Age Group	Polymorphonuclears,* per Cent	Lymphocytes, per Cent	Mononuclears, per Cent	Eosinophils, per Cent	Number of Cases	Polymorphonuclears, per Cent	Lymphocytes, per Cent	Mononuclears, per Cent	Eosinophils, per Cent	Number of Cases
Birth to 2 years	38.0 H. 60 L. 10	55 H. 83 L. 24	6.9 H. 51 L. 2	0 H. 0 L. 0	27					
2 to 6 years	47.3 H. 80 L. 29	45.8 H. 78 L. 17	6.4 H. 45 L. 1	0.3 H. 0.3 L. 0	53	52.7 H. 80 L. 35	46.6 H. 65 L. 29	0.6 H. 0.2 L. 0	0 H. 0 L. 0	3
6 to 12 years	49.9 H. 84 L. 21	42.8 H. 78 L. 10	6.6 H. 17 L. 1	0.7 H. 14 L. 0	43	69.7 H. 76 L. 65	20.7 H. 24 L. 16	4.0 H. 7 L. 0	5.0 H. 9 L. 0	3
12 to 20 years	57.3 H. 88 L. 40	34.8 H. 58 L. 12	5.7 H. 22 L. 0	0.2 H. 2 L. 0	20	56.5 H. 70 L. 44	33.3 H. 40 L. 27	9.3 H. 29 L. 0	1.0 H. 4 L. 0	4
20 years and over	56.4 H. 84 L. 28	35.9 H. 72 L. 6	7.5 H. 37 L. 2	0.2 H. 5 L. 0	57	54.5 H. 89 L. 31	44 H. 68 L. 20	1.5 H. 5 L. 0	0 H. 0 L. 0	6

* Basophils counted with polymorphonuclears.

Two deaths occurred in 775 cases; one may be attributed indirectly to varicella, but the other was coincidental.

The average of the leukocyte counts in this series (237 counts) tends to be increased about 3,000 above normal in infants, even on the first day of the eruption. The age groups between 6 and 20 years have a leukocyte count of about normal on the first day, which increases to about 2,000 or 3,000 above normal by the third day. There is very slight increase in leukocytes in adults in the first three days (about 1,000 above normal). When studied individually, the number of patients showing leukocytosis or leukopenia in the first three days is about equal. From the fourth to the ninth day, the average leukocyte count is about 2,000 to 3,000 above normal.

There is no change in the differential leukocyte count, which is consistent enough to be of significance in diagnosis.

Minor changes in leukocytes should be interpreted with caution because of the normal daily fluctuation in the count.

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CONTOUR OF NORMAL AND TUBERCULOUS CHESTS *

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The shape of the chest of the tuberculous patient and that of the normal is so strikingly different that a study of the various diameters proves very interesting.

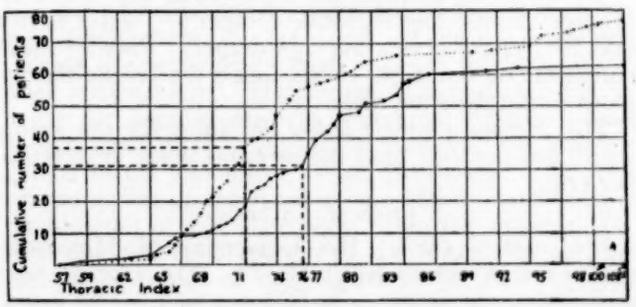
It is still a common belief that the flat chest or, rather, the one with a low thoracic index is apparently more prone to tuberculosis than the deep chest with a greater thoracic index. By the thoracic index is meant the ratio of the anteroposterior measurement to the transverse.

In 1828, Chomel [1] stated that the normal chest was flatter than the tuberculous. Hutchinson [2] in 1897 and again in 1903 [3] showed that the tuberculous chest was absolutely narrower, deeper and more round than the normal; that it was a primitive, undeveloped thorax, one approximating that of the quadruped type. In his study of comparative anatomy he showed that the higher the form of mammal the greater was the transverse diameter as compared to the anteroposterior. He showed that in the development of the fetus the ratio of the anteroposterior diameter to the transverse was as 3:2 in early fetal life, gradually changing to the ratio of about 1:1 at birth. Müller's [4] thoracic measurements in the development of the fetus were similar to those of Hutchinson's. Scammon and Rucker's [5] work on the changes of the chest diameters of the new-born showed that the thoracic index at birth was about 86 per cent; that with the establishment of respiration it rises to about 106 per cent, and that it then drops off in the first twenty-four hours to about 102 per cent. In the middle of the second week the thoracic index is about 100.5 per cent, and it is three months or more before it reaches the thoracic measurements it had at birth.

Smythington,[6] Rodes [7] and Zeltner [8] have shown that the chest continually undergoes changes from infancy to adult life. The thorax becomes more flat anteroposteriorly to about the twentieth year. The chest then begins to assume a more rounded form, changing to one with a greater thoracic index. These changes continue, as shown by Weisenberg,[9] to the age of about 60 years, when development ceases.

Several theories have been offered to explain the changes of the chest diameters. Mehnert [10] proposed that gravity played an important part in the flattening of the chest after birth, because the child spends most of its time on the back and abdomen. Jackson's [11] work on the dog tends to disprove the gravity theory. He concludes that gravity has little to do with flattening of the chest. The descent of the diaphragm may have some bearing on the changes of the shape of the chest.[5] The inflation of the lungs does not take place at the same time throughout, as shown in Champneys' [12] work. He found that the anterior and medial margins expand before the lateral and lower. Freund [13] states that an abnormal shortening of the first rib and an early sheathlike ossification of its cartilage may have some bearing on the shape of the thorax.

I became interested in the shape of the thorax in relation to tuberculosis about three years ago, while teaching physical diagnosis of the chest to the medical students at the University of Minnesota dispensary. I observed that patients who appeared to have flat chests proved to be deep chested when asked to straighten up and throw their shoulders back. They looked flat chested because they allowed their shoulders to droop forward. A straight line could be drawn across the front of the chest from one acromion process to the other. After measuring a few of these patients I found that they were most often really deep chested. After reading Woods Hutchinson's [2] paper on "Some Deformities of the Chest in the Light of Its Ancestry and Growth," I decided to go on with the investigation.



Thoracic index of 140 patients with pulmonary tuberculosis, seventy-seven women and sixty-three men: solid line, men; dotted line, women.

To carry out my experiment I made measurements on the following for:

1. Adult pulmonary tuberculosis, 140 definitely positive diagnosed pulmonary tuberculous patients at the University of Minnesota.
2. Normal adult chests, 166 University of Minnesota students.
3. Abnormal chests of children, fifty-one children at Glen Lake Sanatorium.
4. Normal children, ninety-nine public school children from the Bremer School, Minneapolis.
5. Normal adult chest with chest complaints, forty University of Minnesota Dispensary patients.
6. Asthma and chronic bronchitis and bronchiectasis, twenty-five dispensary patients.

After the average thoracic index for each group had been found, the median was determined. The median is a measurement such that there is the same number of values on one side that there is on the other.[14] The formula of Quetelet [15] was used.

The average deviation of the thoracic indexes of each group was also determined, then the probable error.[16]

* Read before the Minnesota Pathological Conference Society, Nov. 15, 1926, and Glen Lake Sanatorium, March 23, 1927.

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CASES OF PULMONARY TUBERCULOSIS

This series consists of 140 definitely diagnosed pulmonary tuberculous patients, reviewed in the accompanying chart and in table 1. There were seventy-seven males and sixty-three females. The average thoracic index for the males was 75.87 per cent, for females 75.40 per cent, and for the whole group 75.64 per cent.

TABLE 1.—*Thoracic Index of One Hundred and Forty Patients*

Thoracic Index	All Cases, Per Cent	Females, Per Cent	Males, Per Cent
Average	75.5	75.40	75.87
Average deviation	6.24	7.36	5.91
Median	73.0	71.55	76.0
Probable error	±0.521	±0.688	±0.681

These figures may be compared with those found by other investigators. The average thoracic index in Hutchinson's [2] series of eighty-two cases was 79.5 per cent; Evans and McHugh's [17] 107 cases, 80.86; White's [18] thirty-five cases, 77.9; Colbeck's [18] seventy-five cases, 80.30; Draper's [19] seventy-four males, 72.6; twenty-eight females, 74.5; Grabilowitch's [20] series of cases, 73.0 per cent.

In my series of cases the male chest was found to average slightly deeper, while Draper's [19] series shows that the female chests average deeper. Rode's [7] measurements on the negro chests found the female thorax more round than the male.

The average thoracic index deviation for the group was 0.240 per cent, and the probable error is ± 0.654 per cent.

NORMAL CHESTS

For normal chests, 166 University of Minnesota students were measured (table 2). The average thoracic index was found to be 68.1 per cent. This figure was somewhat lower than that found by most other investigators with the exception of Hasegawa.[21] His series of 100 cases showed an average thoracic index of 68.08 per cent; Hutchinson's [2] series of fifty cases, 72.5 per cent; Seaver's [22] series of 2,300 Yale University students, 70 per cent. Grabilowitch's [20] cases showed 70.0 per cent; Malone's,[23] 74.6 per cent, and Otis's,[24] 76 per cent. Probably the reason for these variations is that the level of the chest used for measurement was not given in every instance and some were measured in inches and some in centimeters. My measurements on the chest were made with a pelvimeter graduated in centimeters. The level of the chests measured was at the nipple line.

TABLE 2.—*Normal Chests*

Thoracic Index	Male Students, Per Cent
Average	68.1
Average deviation	3.41
Median	67.2
Probable error	±0.277

The average thoracic index deviation was 3.41 per cent, and the probable error ± 0.277 per cent.

The ages in this group varied from 15 years to 37 years. The average was 20.9 years. The average deviation was 3.4 years, and the probable error ± 0.244.

This marked difference in the thorax between the patients with pulmonary tuberculosis and the normals led me to carry on some measurements on a series of children. For the normal I measured ninety-nine children at the Minneapolis Bremer public school; for abnormal, fifty-one children at Glen Lake Sanatorium.

CHESTS OF NORMAL CHILDREN

This group of ninety-nine children consisted of fifty-four boys and forty-five girls (table 3). The average thoracic index for the boys was 72.4 per cent. There was one boy with a thoracic index of 100. He had an adenitis in the glands of the neck and one gland was broken down, discharging pus. If we leave out this case, the average thoracic index for the boys was 71.9 per cent. The average thoracic index deviation was 4.46 per cent and the probable error ± 0.567 per cent.

TABLE 3.—*Chests of Normal Children*

Thoracic Index	Boys, Per Cent	Girls, Per Cent	Girls and Boys, Per Cent
Average	72.4 71.9*	70.8	71.6
Median	71.0	70.8	70.8
Average deviation	4.46	4.31	4.39
Probable error	±0.567	±0.525	±0.380

* Deducting one tuberculosis suspect.

TABLE 4.—*Chests of Abnormal Children*

Thoracic Index	Boys, Per Cent	Girls, Per Cent	Girls and Boys, Per Cent
Average	73.63	74.88	74.29
Median	72.50	74.50	73.25
Average deviation	5.90	5.0	5.20
Probable error	±1.03	±0.830	±0.654

The average thoracic index for the girls was 70.8 per cent. The average thoracic deviation was 4.31 per cent. The probable error was ± 0.525 per cent.

These measurements may be compared with those found on the children at Glen Lake Sanatorium, this group consisting of twenty-seven girls and twenty-four boys (table 4). The average thoracic index for the girls was 74.88 per cent, and for the boys 73.63 per cent. The average for the whole series was 74.29 per cent, as compared with 71.6 per cent for the normal group.

The percentage of difference between these two groups appears quite marked, 2.69 per cent. However, if the probable error of each series is noticed, the difference is not so great. The reason perhaps is that the children of Glen Lake Sanatorium are not all definitely tuberculous. Most of them are there because of positive von Pirquet tests and as tuberculosis suspects.

Kleinschmidt's [25] series of measurements of thirty-four flat chested children revealed only fourteen to be tuberculous.

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BRONCHIAL ASTHMA AND CHRONIC BRONCHIECTASIS

Twenty-five patients with bronchial asthma and chronic bronchiectasis were measured (table 5). This group, as was expected, showed a very high average thoracic index, 82.83 per cent.

TABLE 5.—*Asthma, Chronic Bronchitis and Bronchiectasis*

Thoracic Index	All Cases, Per Cent
Average	82.83
Median	77.25
Average deviation	10.58
Probable error	±1.632

Other factors may enter into the cause for this high figure. One factor, perhaps, is the average age of this group, 43.5 years. Another may be the possible relationship of asthma to tuberculosis.

NORMAL CHESTS PLUS CHEST COMPLAINTS

A very interesting group of cases, forty in all, consisted of patients coming to the dispensary with chest complaints, but on physical and roentgen-ray examinations not showing definite pathologic changes (table 6). The average thoracic index of this group was higher than that of the normal group of university students and lower than that found on the pulmonary tuberculous cases.

TABLE 6.—*Normal Chests Plus Chest Complaints*

Thoracic Index	All Cases, Per Cent	Females, Per Cent	Males, Per Cent
Average	72.16	72.68	71.37
Median	71.0	71.0	71.0
Average deviation	6.43	7.30	5.12
Probable error	±0.870	±1.39	±1.01

However, after the probable error has been determined, the actual difference between this group and that of the normal tuberculous group is not so marked; yet there is enough difference to show that this series of cases should be kept under close observation as probable tuberculosis suspects.

TABLE 7.—*Ages of the Different Groups*

Type	Age Variations	Median	Average
Pulmonary tuberculosis adults	13-79 yrs.	33.0	33 yrs. 9 mo.
Normal adults	15-37 yrs.	19 yrs. 10 mo.	20 yrs. 10 mo.
Glen Lake children	4-15 yrs.	7 yrs. 1 mo.	8 yrs.
Normal children	7-15 yrs.	9 yrs. 3 mo.	9 yrs. 11 mo.
Asthma and bronchitis	18-72 yrs.	42 yrs.	43 yrs. 6 mo.
Normal chests plus chest complaints	16-45 yrs.	26 yrs.	29 yrs. 3 mo.

VITAL CAPACITY

Hutchinson,[26] Dreyer,[27] West,[28] Stewart,[29] Malone,[23] Cameron,[30] and Meyers and his co-workers[31] have presented exceedingly valuable contributions on vital capacity of the lungs both in health and in disease. They have shown that the vital capacity decreases almost in proportion to the amount of pathologic change in the lungs.

I have carried out a series of observations on the vital capacity of 164 normal students and sixty-nine tuberculosis patients (table 8). Although my number of observations is very small, they compare closely with larger numbers made by the investigators mentioned.

The vital capacity of the normal students varied from 2,450 to 6,200 cc. The average was 4,340 cc. The vital capacity of the tuberculous patients varied from 800 to 4,300 cc. The average was 2,650 cc. In other words, the vital capacity was about 60 per cent greater in the normals than in the tuberculous. This difference is quite high. Malone's[23] series shows a difference of more than 50 per cent.

TABLE 8.—*Vital Capacity*

Vital Capacity	Pulmonary T. B. Cc.	Normals, Cc.
Average	2,650	4,320
Median	2,616	4,255
Average deviation	594	545
Probable error	±61.5	±31.6

PREDISPOSING FACTORS

Hofbauer[32] and others showed that upper respiratory changes, such as nasal obstructions, enlarged tonsils and adenoids, are an important factor in hindering the development of the chest. Chronic bronchitis, asthma and whooping cough[33] cause marked impairment to respiration. Hutchinson[2] believed that the real cause for deep chests was abdominal disorders, such as gas, fixed mass of abdominal contents, and enlarged glands in the abdominal cavity, these interfering with proper action of the diaphragm. His explanation was that instead of the diaphragm using the vertebral column and the inner margin of the lower ribs as fixed points, the center of the diaphragm becomes the fixed point. This causes the chest to be pulled inward and upward instead of downward and forward at each respiration. This condition, associated with rickets, gives rise to the large abdomen ("pot belly") in undernourished children.

What shall be done to help prevent the deep undeveloped chest?

1. Children should be measured at regular intervals, so that those with an index too high for their age may be picked out and proper means taken to correct the defects.

2. Children should be encouraged to participate in sports, gymnastics and games, especially those that are found to aid in the proper development of the chest. Tennis, baseball, work on parallel bars, gymnasium rings, swimming, climbing ladders backward, climbing ropes and trees are very desirable forms of exercise. Götz[34] found that the vital capacity increased in a very short time under these forms of exercise. If the latter is true, a great advance has been made in the prevention of pulmonary tuberculosis, as Malone[23] states that "lung capacity is the real criterion of importance to tuberculosis."

CONCLUSIONS

1. The flat chest appears to be the healthy chest.
2. The round or deep chest is probably an infantile undeveloped chest.
3. The round chest is probably more prone to tuberculosis.

26. Hutchinson, J.: On the Capacity of the Lungs and on the Respiratory Functions with a View of Establishing a Precise and Easy Method of Detecting Disease by the Spirometer, Tr. Med. Chir. **29**: 137, 1846.
27. Dreyer, Georges: The Vital Capacity in Man and Its Relation to the Size of the Body, Lancet **2**: 227 (Aug. 9) 1919; The Assessment of Physical Fitness by Correlation of Vital Capacity and Certain Measurements of the Body, New York, Paul B. Hoeber, 1921.
28. West, H. F.: Clinical Studies on the Respiration: A Comparison of Various Standards for the Normal Vital Capacity of the Lungs, Arch. Int. Med. **25**: 306 (March) 1920.
29. Stewart, C. A.: The Vital Capacity of the Lungs of Children in Health and Disease, Am. Jour. Dis. Child. **24**: 451 (Dec.) 1922.
30. Cameron, C.: The Vital Capacity in Pulmonary Tuberculosis, Tubercle **3**: 353-385 (May) 1922.
31. Meyers, J. A.: Vital Capacity of the Lungs and Its Practical Application, J. Indust. Hyg. **7**, number 1, 1925.
32. Hofbauer, Ludwig: Mund- und Nasenatmung in ihrem Einfluss auf die Thoraxbewegung, Arch. f. d. ges. Physiol. **147**: 271-274, 1912.
33. Foote, J. A.: The Infantile Thorax of the Rachitic Child as a Predisposing Factor in Bronchial Infections, Internat. Clinics **2**: 239-243, 1922.
34. Götz, H.: Modification of Child Chest by Gymnastics, Monatschr. f. Kinderh. **30**: 97-192 (May) 1925.

4. The vital capacity of the flat chest is more than 50 per cent greater than that of the round tuberculous chest.

5. Early childhood diseases may play an important rôle in hindering the proper development of the chest.

6. Good environments, such as fresh air, sunshine, proper food and special forms of gymnastics, can help to increase the vital capacity. To quote Hutchinson,[2] "a month of tree climbing may be worth a gallon of tuberculin."

Clinical Notes, Suggestions and New Instruments

COMBINED SUCTION TIP AND GROOVE DIRECTOR

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Dr. George P. Muller and I have found this suction tip exceedingly useful on many occasions. It has been used chiefly in gastro-enterostomies, in which, after a small incision has been made into the stomach or jejunum, the aspirator is introduced to remove any fluid present. The suction tip is then held tightly against the stomach or bowel, and the incision is made directly down on the groove. In this way, the bowel and stomach are opened with a minimum of injury.

Combined suction tip and groove director.

COEXISTING ACTIVE SYPHILIS OF THE LARYNX WITH ACTIVE PULMONARY TUBERCULOSIS *

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History.—F. R., a man, aged 55, single, born in Germany and twenty-three years in the United States, came to the medical clinic, May 29, 1925. His occupation for the past few years was that of a clothing cutter, before which he had been a butcher, commencing that pursuit when a boy.

He had had a hard chancre twenty-five years before, for which he was treated intermittently. The Wassermann reaction had been negative twice and positive once. Twenty years before admission the patient acquired a gonorrheal urethritis, from which he recovered in four weeks. Nineteen years before admission he had an acute purulent otitis of the left ear, and the recovery was uneventful in about six weeks. Five years before admission he had a skin syphilid, proved by a positive Wassermann blood test at the time. For years the patient had had a slight cough and stated that a physician told him his lungs were "weak."

Up to the onset of the present illness his habits of eating, sleeping and exercising were regular. Alcohol, smoking and the use of tea and coffee had been indulged in moderately. He stated that he had not used habit-forming drugs. His sexual habits were promiscuous.

The family history, both immediate and remote, was good.

The present illness dated back to March, 1925, with the onset of hoarseness, loss of flesh and strength, and marked aggravation of the cough. The cough was productive of a yellowish green, thick sputum. It was persistent night and day. The hoarseness was quite marked, and raising the voice above a whisper would produce pains in the throat. The loss of flesh in three months amounted to more than 20 pounds (9 Kg.), and together with this loss existed a failing of strength, loss of appetite, depression, chills and fever and night sweats.

Physical Examination.—The patient appeared chronically ill. He was stooped. The respirations were 35 a minute; the pulse, 96; the temperature, 100 by mouth at 2 p. m. The weight was 136 pounds (62 Kg.); height, 5 feet 6 inches (167.6 cm.). The gait was slow and careful. The head was normal in size and shape. The eyeballs were sunken. The Argyll Robertson pupil was absent. The nose and ears were normal. The lips were slightly cyanotic; a few teeth were missing and the remaining poorly kept. Fetor oris was very marked. The tongue was slightly coated with a white layer. The tonsils were small and the pillars slightly congested. Examination of the larynx by the nose and throat department revealed a condition regarded as tuberculous laryngitis, especially if pulmonary tuberculosis existed. The neck showed nothing unusual. The chest showed marked depressions of the supraclavicular and infraclavicular spaces, and was of the habitus asthenicus type. Palpation and percussion revealed abnormal signs in the left supraclavicular and infraclavicular regions to the third rib. There were the signs of consolidation. Except for a simple tachycardia, the heart was normal. The spine showed a moderate degree of kyphosis. The abdomen was scaphoid. No tenderness or rigidity was evident. The spleen, liver and kidneys were not palpable. On the penis was a scar, apparently that of the chancre with mixed infection. The extremities were normal except for their loss of flesh and clubbing of the finger nails. The reflexes were normal.

Clinical Observations.—The afternoon temperature, pulse and respiration from May 29 to June 5 varied from 99.8 to 100.4 F., 90 to 102, and 22 to 30, respectively. These observations were recorded in the early afternoon. A roentgenogram of the chest revealed infiltration of the left upper lobe, apparently tuberculous. Two Wassermann blood tests were done by us; one was negative, the other 1 plus. A spinal Wassermann test was refused by the patient. Blood count and smear were negative except for a slight secondary anemia. The urine was normal. The first report on the sputum was negative for *B. tuberculosis*, but the subsequent reports were all positive for that organism. Laryngeal smears were twice negative for *B. tuberculosis*.

Treatment and Course.—Six injections, at weekly intervals, of neoarsphenamine, 0.6 Gm., were given. Toward the end of the fourth week the patient's hoarseness commenced to lessen and at the fifth week there was considerable improvement. The hoarseness and cough were almost gone by the sixth week. The expectoration decidedly decreased. Appetite, weight and strength were returning. Aside from this treatment the patient was instructed as to diet, rest and general hygiene. The patient had utilized all hygienic and dietetic measures prior to receiving the neoarsphenamine, without avail. In fact, he had been growing worse.

The patient desired to return to Germany to visit his relatives and left the United States late in August, 1925, increased in weight and strength, his hoarseness gone, but with a slight cough present.

COMMENT

This case is reported because it apparently offers an instance of a syphilitic laryngitis developing in a patient suffering from active pulmonary tuberculosis. There are cases of syphilis of the larynx[1] which closely simulate a tuberculous laryngitis and make the diagnosis difficult. The frequent association of pulmonary tuberculosis with laryngeal tuberculosis would almost always favor, in doubtful cases, a diagnosis of the latter over syphilis of the larynx in the existence of a pulmonary Koch infection. The patient would be regarded as almost hopeless of a cure, the family would be informed of the fact, and such a case as this would be recorded as tuberculous laryngitis complicating pulmonary tuberculosis. But the case presented here emphasizes the fact that active syphilis of the larynx may exist with an active tuberculous lesion of the lung. Further, in doubtful laryngeal cases, especially when there is a history of syphilis, antisyphilitic treatment should be tried before a positive diagnosis of the laryngeal condition is made. Apparently, the prognosis may be entirely different.

* From the Medical Service of Dr. William J. Pulley, the University and Bellevue Hospital Medical College.

* Read before the College Medical Society of the University and Bellevue Hospital Medical College, Jan. 3, 1927.

1. Phillips: Tuberculosis of the Larynx, in Diseases of Ear, Nose and Throat, Philadelphia, F. A. Davis Company, 1911, p. 425. Turner: Nose, Throat and Ear, New York, William Wood & Co., pp. 184-190.

Special Article

IMMUNITY IN TUBERCULOSIS

VACCINATION WITH LIVING VIRULENT, AVIRULENT AND DEAD TUBERCLE BACILLI *

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The present general trend in the prevention of tuberculosis, apart from the sociological campaign measures, is still the search for a method of producing specific immunity which can be safely applied for practical use in children.

In dealing with such a shopworn subject as immunity in tuberculosis, a subject which has led to many controversies and a general disagreement, one must be very cautious in forming any opinion. The prevailing skepticism and apathy toward a new investigation covering some old problem is justifiable for the reason that many claims in the past when subjected to a rigid test failed to meet all the requirements.

No attempt will be made to review in detail the literature, which is voluminous and in part very contradictory, as it will be a hopeless task and will add little toward forming an hypothesis which can be used as a basis for discussion. However, no review of this nature can be successfully presented by ignoring investigations having a direct bearing on the subject under consideration.

With the discovery of the tubercle bacillus as the etiologic factor in tuberculosis, a discovery accepted with only a few reservations and little skepticism, the inquisitive mind of the immunologist was concentrated on the methods that could be used for treatment and in prophylactic immunization.

The Jenner method of vaccination of years ago, with innumerable modifications, was employed in the early period of investigations, and the brilliant work of Pasteur with anthrax and chicken cholera suggested a good many possibilities.

All the methods used up to the present time in producing artificial immunity in tuberculosis can be divided into three main groups, based on (1) the use of living, virulent tubercle bacilli; (2) the use of living, avirulent organisms, and (3) the immunity produced with dead tubercle bacilli. I shall discuss them in the order mentioned.

IMMUNIZATION WITH LIVING VIRULENT TUBERCLE BACILLI

The universal occurrence of infection throughout the civilized world with its apparently low death rate attracted the attention of many investigators and led them to study the so-called naturally acquired resistance to tuberculosis and its relation to the further development of clinical disease. Investigations revealed the fact that with the implantation of the tubercle bacillus an alteration of the cells took place, so that they reacted to a second implantation entirely different from the first. This changed state is commonly spoken of today as "allergy."

The wide distribution of tubercle bacilli in civilized communities is quite apparent. If from 80 to 90 per cent of the population at large, up to the age of 20, has been infected with tubercle bacilli, and there is no question that nearly every one comes in contact with them, why does such a small number of these infected individuals develop clinical disease usually later in life? Could it be that small infections received from time to time in childhood and continuing through the period of adolescence have some beneficial effect by setting up a certain amount of resistance against a clinical tuberculosis?

These arguments were put forward by many investigators and were based on the investigations of Koch [1] and Römer.[2]

Koch's experiments showed that if infected animals were again inoculated subcutaneously with a small amount of living tubercle bacilli, the point of inoculation ulcerated within from three to four weeks but had a tendency to heal gradually, while if a single subcutaneous inoculation was made, it gradually developed into an ulcer which persisted until the death of the animal.

Römer's investigations confirmed these experiments of Koch and in addition revealed that if guinea-pigs were primarily infected with virulent tubercle bacilli, and a progressive disease resulted, it was very difficult to reinfect them. This resistance to a second infection ran closely parallel with the extent of the disease. In other words, the primary infection warded off the progress of the second implantation.

If the resistance that can be observed in the experimental animal, rendered so by reinfection, is correlated with the acquired resistance established spontaneously in human beings by periodic implantation of the organisms, and if such a condition can be brought about in a natural way, and that only with living tubercle bacilli, the most logical step would be to use a definite dosage at definite intervals in order that immunization be made more efficient. These have been the premises on which has been based the investigation on the use of living, virulent tubercle bacilli as a vaccine.

One other argument put forward in favor of the use of living, virulent tubercle bacilli has been based on Welch's hypothesis that a virulent micro-organism on entering the body may not only create substances directly injurious to the defensive forces of the host, but actually acquire immunity against the defensive forces of the body. This means that living, virulent organisms which can produce disease in animals or human beings are the only ones to create the formation of specific immunity against a virulent organism. It is useless, according to this hypothesis, to use avirulent organisms to produce immune bodies against a pathogenic organism. The followers of this hypothesis hold that a nonpathogenic organism can produce homologous antibodies only for the species inoculated and not against a virulent strain of organisms.

To my knowledge, Webb and Williams [3] were first to use living, virulent tubercle bacilli in attempts to produce immunity in animals and in children. As a child living in contaminated surroundings is certain to become infected from time to time, the dosage sometimes being small but occasionally large, they thought it better to infect the child with minute doses at definite intervals, thus establishing protection without running the risk of a massive infection. Using Barber's method for counting tubercle bacilli, they immunized some rabbits and guinea-pigs by inoculating them with living tubercle

* Read before the Saranac Lake Medical Society, Dec. 1, 1926.

1. Koch, R.: Deutsche med. Wchnschr. **17**: 101, 1891.
2. Römer, P. H.: Beitr. z. Klin. d. Tuberk. **13**: 1-63, 1909.
3. Webb, G. B., and Williams, W. W.: Tr. Sixth Internat. Congress of Tuberc., section 1, **1**: 194, 1908; Immunity in Tuberculosis, J. A. M. A. **57**: 1431 (Oct. 28) 1911.

bacilli, beginning with very small doses, 1, 3, 5, 8, 12, and so on, organisms, given at weekly intervals. They kept some of their animals for nine months, killed them, and at autopsy found that, in some of the guinea-pigs which received a total of 140,000 tubercle bacilli, tuberculosis could not be demonstrated. The same results were obtained in monkeys. In 1911, these investigators reported the application of this method to two children, one 3 months old and the other 3 years. Both of these children gave a negative reaction at the onset of the experiments. Four months after the treatment the children still gave a negative reaction to the Pirquet test, although they were living in contaminated surroundings. Webb and Gilbert [4] reported some other vaccinations in 1914, but as the details of the outcome of this human experiment are lacking, I need not mention them at this time.

This work has been carefully checked by Bruyant,[5] who used a method similar to that of Barber's but perhaps not so accurate. Using guinea-pigs and rabbits, Bruyant failed to confirm their work, producing only a chronic tuberculosis in the animals.

This is in accord with our own experiments. Brown, Heise and I,[6] in 1914, using Barber's technic in counting the bacilli, attempted to duplicate some of Webb's results. A large group of guinea-pigs was chosen for the experiment, and the dosage and intervals of inoculation were exactly like those advocated by Webb. At the end of a year many of the animals were killed, and not a single guinea-pig was free from tuberculosis. A degree of protection was shown only by the increasing number of days of life and by establishing a chronic disease in the guinea-pigs. The organism used by us was a virulent strain of human tubercle bacilli. Webb and Gilbert,[4] following our publication, after using our virulent tubercle bacilli, made the statement that it was not possible to immunize an animal with cultures of tubercle bacilli of such high virulence that ten organisms can produce tuberculosis in guinea-pigs.

New interest in experiments along this direction has been recently shown by some German investigators. At the recent meeting in Washington, Selter [7] made the following dogmatic statement:

> I therefore expressed, many years ago, the opinion that successful immunization can be produced *exclusively* by living, sufficiently virulent tubercle bacilli which are capable of infecting the body, that is, become fixed, and creating a tuberculous focus. We shall find immunity an active force only so long as the tubercle bacilli exist in the body as a living force and are in reciprocal activity with the body. Should the tuberculous focus completely disappear and the bacilli vanish, immunity will also disappear.

According to Selter, the tuberculous immunity in experimental animals was strongest in those in which the infection called forth only a small, local, anatomic tubercle, which remained localized. On the other hand, when there was a progressive tuberculous disease, this immunity was very much more uncertain. It is surprising that Selter,[8] with such limited experimental data, had the courage to apply this method in the vaccination of children. Nine infants of various ages up to 18 months were inoculated with doses of virulent human tubercle bacilli, the dosage being from 12 to 10,000 organisms. All these children previous to inoculation gave a negative skin test. No ill effects followed these inoculations. Where the dosage was large, a small nodule developed, a few of which in time ulcerated. Eight of the nine children developed positive tuberculin reactions, after twenty-eight days with the large dose and three and one-half months with the small dose. In one child who died of pneumonia there was an opportunity to trace the path of the inoculated organisms. At autopsy, macroscopic evidence of tuberculosis could not be found, with the exception of a small ulcerated focus at the site of inoculation. Portions of various organs were triturated and inoculated in guinea-pigs. Positive results were obtained only in a guinea-pig inoculated with triturated lymph nodes regional to the inoculation. Further details as to the outcome in the remaining eight children must be awaited.

4. Webb, G. B., and Gilbert, G. B.: Immunity in Tuberculosis, J. A. M. A. **63**: 1098 (Sept. 26) 1914.
5. Bruyant, L.: Compt. rend. Soc. de biol. **71**: 143, 1911.
6. Brown, L.; Heise, F. H., and Petroff, S. A.: J. M. Research **30**: 475, 1914.
7. Selter, H.: National Tuberculosis Association, Washington, D. C., October, 1926.
8. Selter, H.: Deutsche med. Wchnschr. **51**: 933 (June 5) 1925.

VACCINATION WITH AVIRULENT AND ATTENUATED TUBERCLE BACILLI

Often it has been stated that the most suitable method of immunization will follow the discovery of some type of tubercle bacillus possessing high antigenic properties in producing immunity and still lacking the ability to produce a disease. Search for such an organism can be traced through the literature for the last four decades.

Forty years ago, in 1886, Cavagnis [9] made an attempt to immunize animals by using an increasing amount of tuberculous sputum which previously had been treated with a weak solution of phenol (carbolic acid). The results were not very encouraging.

Then followed a period of extensive investigation. As nothing was known of the differentiation of various types of tubercle bacilli, the reports were contradictory. Not until the beginning of this century, when the distinction between the human and the bovine bacillus was made by Theobald Smith, could this discrepancy be explained.

In 1890, Grancher and Ledoux-Lebard [10] vaccinated rabbits with an avirulent type of tubercle bacilli. As the number of animals used in this experiment was small, the results obtained were not very convincing, although interesting and encouraging.

Probably the first work in this country with attenuated, living tubercle bacilli was that of Dixon,[11] who found that old cultures having a pleomorphic tinctorial characteristic, i. e., club-shaped and branching forms, could be successfully employed for immunizing animals against a virulent infection. Trudeau,[12] working with an organism which had lost its pathogenicity during prolonged artificial cultivation, came to the same conclusion: that attenuated cultures when inoculated in animals can render them immune to a second inoculation of living, virulent tubercle bacilli.

Since the work of these two investigators, the experiments of de Schweinitz,[13] Pearson and Gilliland,[14] and others in this country have confirmed their observations.

Grancher and Martin [15] made an effort to immunize rabbits by using cultures whose virulence they modified by cultivation on various mediums from which some important ingredients had been omitted. The results obtained were not very convincing.

9. Cavagnis, V.: Compt. rend. Acad. d. sc., Nov. 29, 1886.
10. Grancher, J., and Ledoux-Lebard: Arch. de méd. expér. et d'anat. path. **2**, 1891.
11. Dixon: Medical News, Philadelphia, Oct. 19, 1889.
12. Trudeau, E. L.: New York M. J. **58**: 97, 1893; Medical News, Oct. 24, 1903.
13. De Schweinitz: M. News, Dec. 8, 1894.
14. Pearson and Gilliland: Philadelphia M. J., Nov. 29, 1902.
15. Grancher, J., and Martin, H.: Semaine méd. 1890, number 37.

At the beginning of the twentieth century, little work was done with this type of immunization. In all probability this was due to the striking report made by Theobald Smith,[16] von Behring,[17] von Behring, Römer and Ruppel,[18] and others, that the human tubercle bacillus was not pathogenic for cattle. These observations suggested a new means for prophylactic immunization against bovine infection. The organism used was the human tubercle bacillus, either in its virulent form or slightly altered by prolonged cultivation. Old cultures dried in vacuo appeared to be more suitable for such immunization. It was found that calves inoculated intravenously with such material could be readily immunized against a subsequent lethal dose of bovine bacilli.

Neufeld [19] and Neufeld and Miessner [20] also demonstrated that the ass and the goat could be readily immunized against large doses of very virulent, living tubercle bacilli by previous treatment with from 0.01 to 0.03 Gm. of human tubercle bacilli cultivated on glycerin broth for from thirty to forty days. The resistance in these animals was rather high since they withstood the infecting dose of 0.02 Gm. of bovine tubercle bacilli. However, it was demonstrated that the bacilli could be readily isolated from any lymph nodes after the death of the animal, showing that the infecting organism was not destroyed.

The discovery suggested new lines of experimentation. The method of vaccinating cattle was tried in many parts of Germany, Italy, Sweden and Denmark, and in the United States by Smith,[21] Pearson and Gilliland,[22] and Pearson.[23] The results were very encouraging at first, but it was soon found by Stanley Griffith [24] in England and by Theobald Smith [21] in this country that cattle inoculated with living, virulent human tubercle bacilli may harbor the organism for a long time and pass it into the udder, thus rendering the milk contaminated and unsuitable for use. Naturally, this method of vaccination was open to grave criticism and it was soon abandoned, especially when it appeared to protect the calves only for a year or two.

Failing to obtain desirable results with human tubercle bacilli vaccination in cattle, attenuated and nonvirulent types were again tried. The discovery of the various types of acid-fast organisms offered some new lines of investigation. Moeller,[25] Friedmann [26] and others used the organisms isolated from the slow-worm, turtle and carp, with the hope of finding among them an organism which had good antigenic and immunizing properties. The results from all experiments with such types of organisms have failed to show their value in immunity in tuberculosis.

Klimmer [27] introduced a type of vaccine called by him "antiphymatol." It was composed of two fractions. The first consisted of human tubercle bacilli which were heated at from 52 to 53 C. and designated as T. H. The second fraction was prepared from an avirulent culture of human tubercle bacilli isolated from the body of the salamander and was marked A. T. These two were mixed in equal parts and used as a vaccine. The inoculations were made either intravenously or subcutaneously. The claims for this vaccine, after an extensive trial in Saxony, were soon disqualified.

A type of attenuation following very closely Pasteur's experiment with chicken cholera was that of Arloing,[28] who cultivated the organism at the bottom of the broth culture medium and not at the surface as is the common practice. Cultures so inoculated were shaken every day. The temperature of the incubator was raised after each subculture, beginning with 37 C., until finally it reached 46 C. Organisms developed rapidly at first, but soon their growth was retarded somewhat at the higher temperature. Organisms developed, however, at the bottom of the culture medium even at the higher temperature. This method of cultivation rendered them nonpathogenic and nonacid-fast. Two injections of these modified organisms made at intervals of from three to three and one-half months were sufficient, according to the originator of this method, to render the experimental animal immune to a subsequent virulent inoculation. When the method was tried on a large series of animals, it failed to prove of value.

With the introduction of the sensitized typhoid vaccine by Besredka, an attempt was made by Vallée and L. Guinard [29] to sensitize tubercle bacilli with some antituberculous serums. A serum containing a high titer of agglutinating and complement-fixing antibodies was obtained by inoculating animals first with dead, and then with living, virulent organisms. A definite amount of living tubercle bacilli was mixed with this serum. After a short incubation at 37.5 C., the mixture was centrifugalized, the supernatant fluid was discarded, and the organisms were suspended in salt solution and used for immunizing purposes. It was asserted that by this method the tubercle bacilli had adsorbed the antibodies, and that the antigen plus antibodies was much more effective in producing immunization than tubercle bacilli alone. The theory was very plausible and there is no question that it has merit; but as there has been no study on a large scale to prove the value of this method, opinion must be reserved.

In a review of the subject, the various vaccines prepared from tubercle bacilli modified by chemical means cannot be completely ignored. Auclair [30] and others found that the property which caused the abscess formation when living or dead organisms were inoculated into animals could be separated from the micro-organism through the use of lipoid solvents such as alcohol, chloroform, benzene and toluene. As the protein fraction of the micro-organism is the chief antigenic component, the theory was to remove the lipin fraction as it produces no antibody but undesirable abscesses.

Martin and Vaudremer [31] first washed the tubercle bacilli with ether in order to remove the water and glycerin; then they allowed the organism to remain in ether for six weeks. Guinea-pigs sensitized with these supposedly fat-free tubercle bacilli had more resistance to the infecting dose than the control animals. Vallée [32] vaccinated calves with tubercle bacilli which previously

16. Smith, Theobald: J. M. Research **18**: 451-485, 1908.
17. Von Behring, E.: Ztschr. f. Thiermed. **6**, number 5/6.
18. Von Behring, E.; Römer, P. H., and Ruppel, W. G.: Jahresb. über path. Mikroorg. **18**: 461, 1902.
19. Neufeld, F.: Deutsche med. Wchnschr. **30**: 660, 1241, 1904.
20. Neufeld, F., and Miessner: Ztschr. f. Hyg. u. Infectionskrankh. **51**: 300, 1905.
21. Smith, Theobald: The Parasitism of the Tubercle Bacillus and Its Bearing on Infection and Immunity, J. A. M. A. **46**: 1247 (April 28) 1906.
22. Pearson, L., and Gilliland: Pennsylvania Univ. M. Bull., 1906.
23. Pearson, L.: Rev. Henry Phipps, Inst. **2**: 311-381, 1906.
24. Griffith, Stanley: J. Path. & Bact. **17**: 323, 1913.
25. Moeller, P.: Ztschr. f. Tuberk. **5**: 206, 1903.
26. Friedmann, F. F.: Deutsche med. Wchnschr. **29**: 954, 1903; **30**: 166, 1904.
27. Klimmer: Ztschr. f. Thiermed. **12**: 81, 1908.
28. Arloing, S.: Compt. rend. Acad. d. sc. **142**: 1395, 1906.
29. Vallée, H., and Guinard, L.: Compt. rend. Acad. d. sc. **150**: 1140, 1910.
30. Auclair: Rev. de la tuberc. number 1/2 (Jahresb. über path. Mikroorg. **20**: 554, 1904).
31. Martin, L., and Vaudremer, A.: Compt. rend. Soc. de biol. **61**: 258, 1906.
32. Vallée, H., quoted by Calmette, Tubercle Bacillus Infection and Tuberculosis in Man and Animals (trans), Baltimore, Williams & Wilkins Company, p. 630.

had been washed with purified petroleum benzin by a mechanical shaking device for fifty hours. The organisms so treated almost completely lost their acid-fast properties. Using the intravenous route, he sensitized animals with from 25 to 100 mg. Considerable resistance against fatal infecting doses was noted. Citron and Bruck, and Deycke and Much substantiated this, reporting a marked degree of resistance obtained against virulent infection when organisms so treated were used.

Tubercle bacilli treated with the halogens—bromine, chlorine, iodine and fluorine—lose somewhat their acid-fast properties. Moussu and Goupil [33] found that tubercle bacilli lose their acid-fast properties after three days' extraction with Javel water. Organisms so treated were used in dogs and rabbits. Some degree of resistance was reported.

Calmette, Guérin and Breton,[34] chlorinating the bacilli and administering them by mouth, found that a slight protection could be established by this method. Rappin,[35] using sodium fluoride in changing the acid-fast properties of tubercle bacilli, reported a slight degree of resistance from their use. Noguchi [36] and Marxner,[37] treating the tubercle bacilli with sodium or ammonium oleate, reported results very similar to those already stated. Urea and galactose were also used to attenuate the organisms, but with less success. Deycke and Much [38] obtained some encouraging results with tubercle bacilli which have been suspended in ovolecithin. Using a large series of guinea-pigs, they have unquestionably demonstrated to their minds a degree of resistance in guinea-pigs treated with such a preparation.

Rabinowitsch [39] found that if tubercle bacilli were cultivated on a medium containing formaldehyde, the virulence was very much attenuated. The results obtained in establishing immunity, however, were not any more encouraging than those already reported.

Instead of employing the various chemical reagents to kill the tubercle bacilli, Trudeau,[40] Di Donna [41] and also V. and Mme. Henri [41] used the radiations from the various parts of the spectrum to kill the organism, the first two by direct sunlight and the latter by the ultraviolet rays. The results were practically nil.

Considerable enthusiasm and interest have been shown in the last few years in the experiments reported from the Pasteur Institute on immunity in tuberculosis. Calmette and Guérin,[42] who have championed this investigation, report that they have obtained some remarkable results with organisms modified by cultivation. Tubercle bacilli of bovine origin, isolated in 1908, had been passed through 230 successive subinoculations on a special medium devised by Calmette, which consists of potato saturated with concentrated bile containing 5 per cent glycerin. It is said by these authors that this organism, which is designated as B C G, is not infectious or toxic for calves even if 100 mg. is inoculated intravenously. The culture was tested on calves, and the method was as follows: Two inoculations, one month apart, of from 5 to 20 mg. of B C G were made either intravenously or mixed with the food and fed to the animals. The virulent inoculation test to determine the immunity was made one month after the last vaccination, the dose consisting of 3 mg. of virulent bovine tubercle bacilli. Even a single subcutaneous injection of B C G (from 50 to 100 mg.) in the calf gave complete protection to 5 mg. of virulent bovine cultures. In the earlier reports they stated that the animals inoculated with this vaccine remained perfectly well, and when they were killed eighteen months later, tuberculosis could not be found at autopsy in the lungs, abdominal viscera or any of the lymph nodes. Recently, however, on more careful examination, they found that the tracheal and mediastinal lymph nodes of a bullock vaccinated eighteen months previously, when inoculated in guinea-pigs, produced generalized tuberculosis. It is evident, they say, that the virulent tubercle bacilli were not destroyed in the vaccinated animals but arrested, preventing a generalized tuberculosis. The controls, on the other hand, manifested a picture of generalized tuberculosis. The experiments were carried out with rabbits, guinea-pigs, monkeys, chimpanzees and other types of anthropoids, the subcutaneous, intravenous and gastro-intestinal routes being used for injection. The large amount of experimental data at hand convinced them that it was safe to apply this type of vaccination to children.

The organisms were generally cultivated on solid mediums, such as potato bile, or, if a large amount of growth was desired, Sauton's synthetic medium could be used. No other instructions are given, with the exception that a growth not older than twenty-five days or a suspension not older than ten days should be considered suitable for immunization. After the proper amount of growth had been accumulated, the organisms were aseptically collected and triturated with salt solution. The most desirable suspension was that in which 1 cc. contained 500,000,000 organisms, or 10 mg. of tubercle bacilli. The vaccination of babies was accomplished by mixing 1 cc. of this suspension with a small amount of milk and giving it to the infants before nursing. Three such doses were given at intervals of forty-eight hours, on the third, fifth and seventh days after birth.

The gastro-intestinal tract was selected as the portal of entry for vaccination for the reason that Disse and Ehrlich had previously pointed out that the mucous membrane of the intestines in newly born infants is not completely developed until one week after birth, thus favoring a proper permeability not only to the whole protein molecules, but to whole bacteria which can readily be absorbed into the lymphatic system.

The following is a summary [43] of some of the results obtained on children to date: In the first period of their work, i. e., from July, 1921, to June, 1922, Calmette and Weill-Hallé vaccinated 120 infants. Eighty of these could be located in 1926 and proved to be in good health. Twenty-four of the eighty have been living in surroundings infected with tubercle bacilli. Only one, however, remained with its tuberculous mother and two others with the father, who was a tubercle bacillus carrier. No further details are given.

In the second period, i. e., from June, 1924, to May 31, 1926, they vaccinated 356 infants. One hundred and forty-five, or approximately 40 per cent, continued under their observation. Of these 145, 111 are

33. Moussu and Goupil: Compt. rend. Acad. d. sc. **145:** 1231, 1359, 1907; **146:** 44, 1908.
34. Calmette, A.; Guérin, C., and Breton, M.: Ann. de l'Inst. Pasteur **21:** 401, 1907.
35. Rappin: Compt. rend. Acad. d. sc. **149:** 408, 1909; **164:** 421, 1917.
36. Noguchi, Hideyo: Centralbl. f. Bact., I, orig. **52:** 85, 1909.
37. Marxner, A.: Ztschr. f. Immunitäts. **10:** 118, 1911.
38. Deycke, G., and Much, H.: Centralbl. f. Bakteriol., I, orig. **54:** 342, 1910.
39. Rabinowitsch: Berl. klin. Wchnschr. **50:** 114, 1913.
40. Trudeau, E. L.: M. News **87:** 1-3, 1905.
41. Quoted by Calmette: Tubercle Bacillus Infection and Tuberculosis in Man and Animals, p. 634.
42. Calmette, A.; Guérin C., and Weill-Hallé, B.: Presse méd. **32:** 553 (July 2) 1924; **33:** 825 (June 20) 1925; Ann. de l'Inst. Pasteur. **40:** 89 (Feb.) 1926.

43. Calmette, A., and Weill-Hallé, B.: National Tuberculosis Association, Washington, D. C., October, 1926.

living in surroundings supposedly free from tuberculosis and thirty-four remained in contaminated surroundings. Of these 145, twenty-one are dead, four having belonged in the group of thirty-four children who were in tuberculous surroundings, or approximately 12 per cent. The other seventeen, or 15 per cent, belonging to families with no history of tuberculosis, died from various diseases other than tuberculosis. The history of the causes of death lacks details, and the authors are not certain as to the actual cause of death, since it is not stated that autopsies were performed on these children.

From July, 1924, to June, 1926, throughout France, they vaccinated more than 11,208 children. Only 1,885 of these were under their observation. Of these, 291 were born in tuberculous surroundings, of which eleven, or approximately 4 per cent, died, eight from meningitis and three from gangliopulmonary tuberculosis. Of the 563 vaccinated from six months to one year prior to June 30, 1926, of whom 106 were born of tuberculous mothers, two died, presumably of tuberculosis.

A careful analysis of the various figures presented by the authors show them to be rather confusing. It seems wiser to figure the percentage of the two groups separately; i. e., the infants born in tuberculous surroundings and those born in healthy families. Figures so gathered may be of some value. The death rate, according to Calmette, is 25 per cent in nonvaccinated children in contaminated surroundings during the first year, a rate which has been disputed by Loewenstein,[44] who states that even in the city of Vienna, which has the largest infant death rate, it does not reach nearly this figure. Any attempt, therefore, to compare this figure with the death rate of the vaccinated group, which represents the whole number of infants living in infected and healthy surroundings, is not justifiable. One other rather puzzling statement made is that the skin test was positive in only 6 per cent of 100 children tested after vaccination.

The studies reported by these authors are very interesting. If the conclusions based on experimental data prove to be correct in the hands of other workers, then this method should afford a good means of prophylactic immunization. Nevertheless, the method must not be accepted too hastily. How much the prevention campaign which in part is associated with the vaccination procedure has influenced the decrease of infection at present cannot be determined. I cannot help being a little skeptical for the reason that many statements made do not fit the present concepts of immunity in tuberculosis. This is especially true of the claim that the B C G bacilli do not develop anatomic tubercle or skin hypersensitiveness; and again there is the possibility of the organisms mutating back to their original virulence.

VACCINATION WITH KILLED TUBERCLE BACILLI

Perhaps the bulk of experiments since the discovery of the tubercle bacillus has accumulated in the attempt to establish immunity with dead organisms. Koch was probably the first to use this method for treatment and immunization. Babes and Proca,[45] Prudden and Hodenpyl,[46] Straus and Gamaleïa,[47] and Trudeau[48] were forerunners in such investigations. Prudden and Hodenpyl were the first to point out that the anatomic structure of the tubercle set up with dead organisms did not vary in its structure from that caused by living organisms. Babes and Proca, so far as I know, were the first to obtain generalized systemic tuberculin reactions in animals sensitized with dead tubercle bacilli. Trudeau, Baldwin and Kinghorn[48] repeatedly demonstrated the correctness of these observations. Trudeau,[48] studying the immunity produced with heat killed cultures and comparing it with that produced with a series of living, attenuated, human culture, R_1, concluded that the resistance in animals immunized with dead cultures was less pronounced when compared with that in animals given attenuated, living organisms, though more than that in the control animals. In the former, the average length of life was 155 days. The average in the experiment with heat killed tubercle bacilli was ninety-nine, while in the control animals it was only seventy days.

I. Straus,[49] by repeated inoculations with a small amount of tubercle bacilli killed by heat, and by spacing the inoculations from ten to twelve days apart, demonstrated increased resistance against tuberculosis in rabbits. In testing this immunity he used 2 mg. of living bovine bacilli. Dembinski[50] carried out some similar experiments, which consisted in infecting the meninges and the brain of rabbits. Animals were sensitized by subcutaneous inoculation with increasing doses of dead tubercle bacilli on seven occasions, the dosage varying from 0.1 to 1.0 mg. After this procedure, he inoculated intracerebrally 2 mg. of living culture. None of the animals developed meningeal tuberculosis, while the controls died within twenty-eight days. A proper criticism which may be made of this work is that at the time the identity of the tubercle bacillus which he was using was not known. Probably he was not working with the bovine organism.

Calmette, Guérin and Breton[34] experimented with guinea-pigs, using the enteral route for sensitization, and concluded that the protective value of the killed tubercle bacilli was slight. However, they, as well as other investigators, used 5 mg. of virulent, living tubercle bacilli to test the protection. In a second experiment two inoculations were made, the first with 5 mg. of bacilli heated at 100 C. and the second with the same amount of organisms but heated only to 65 C. Forty-five days after sensitization, the sensitized and the control animals were inoculated with 10 mg. of virulent, bovine tubercle bacilli. In spite of this massive infecting dose, many of the sensitized animals lived from seven to nine months, outliving the controls. Smith and Lewis[51] failed to notice any appreciable amount of resistance in animals treated with heat killed tubercle bacilli. The experience of Dienes and Schoenheit,[52] Selter and Geschke[53] and Dold[54] has been the same.

Experiments with cattle are of considerable interest. Calmette and Guérin[55] immunized some cattle with

44. Loewenstein: Personal communication to the author.
45. Babes, V., and Proca, G.: Ztschr. f. Hyg. u. Infectionskrankh. **23**: 331, 1896.
46. Prudden, T. M., and Hodenpyl, E.: New York M. J. **53**: 637, 697, 1891.
47. Straus, I., and Gamaleïa, N.: Arch. de méd. expér. et d'anat. path. **3**: 705, 1891.
48. Trudeau, E. L.; Baldwin, E. R., and Kinghorn, H. M.: J. M. Research **12**: 169, 1906.
49. Straus, I., quoted by Calmette: Tubercle Bacillus Infection and Tuberculosis in Man and Animals, p. 627.
50. Dembinski: Compt. rend. Soc. de biol. **55**: 1409, 1903.
51. Smith, Theobald: Certain Aspects of Natural and Acquired Resistance to Tuberculosis, J. A. M. A. **68**: 766 (March 10) 1917.
52. Dienes, L., and Schoenheit, E. W.: Am. Rev. Tuberc. **13**: 379 (April) 1926.
53. Selter, H., and Geschke: Ztschr. f. Hyg. u. Infectionskrankh. **102**: 303-312, 1924.
54. Dold, H.: Klin. Wchnschr. **4**: 1763 (Sept. 10) 1925.
55. Calmette, A., and Guérin, C.: Ann. de l'Inst. Pasteur **28**: 329, 1914.

tubercle bacilli heated at 60 C. for thirty minutes. Thirty days after sensitization 3 mg. of living, virulent, bovine culture were given to the controls and also to the sensitized animals. The results were very encouraging. In the control animals there was generalized tuberculosis involving the viscera and scattered through the body, while in the vaccinated animals there was tuberculosis only in the bronchial and mediastinal lymph nodes, which were very much enlarged and caseous.

Loeffler [56] was inclined to believe that killed tubercle bacilli can protect dogs against virulent infection but that this protection is not absolute but relative. The organisms used by him were desiccated and killed by dry heat. In animals inoculated with such a suspension, a certain degree of protection was noted. Many of the animals tolerated the injection of from 250 to 300 mg. of human tubercle bacilli intraperitoneally.

The proposal to apply this type of vaccination in children has not yet received favor, and the method has not been thoroughly tried thus far. Langer,[57] however, vaccinated some children with dead tubercle bacilli, after which he observed skin hypersensitiveness develop. The experience of Fedders [58] has been the same. In fact, the experiments have not advanced far enough to warrant the drawing of any conclusion. Nathan Raw [59] probably has reported the largest series of children vaccinated with dead tubercle bacilli. After obtaining considerable experimental data with guinea-pigs and cattle, using killed tubercle bacilli, he vaccinated 412 children from 1½ to 14 years of age. Six injections, at weekly intervals, consisting of from 0.001 to 0.006 mg., were made. The children were all from tuberculous surroundings. In no instance was any discomfort or ill effect experienced, and during a study lasting four years not a single child in this group died of tuberculosis.

With the introduction of the intracutaneous test by Mantoux and Moussu,[60] the allergic state which was always present in infected animals could be more carefully studied and followed. Römer,[61] in a very extensive experiment, concluded that skin hypersensitiveness ran parallel with immunity, and there are a good many followers of his doctrine on immunity. Previous to the discovery of the intracutaneous test, the reaction described as the tuberculin reaction was nothing but a generalized systemic reaction, terminating sometimes in death. Römer reported obtaining a positive skin reaction in a few animals when dead tubercle bacilli were used as the sensitizing agent. Another small series of animals was reported by Baldwin.[62] From time to time there was some mention made in the literature of the fact that animals treated with dead tubercle bacilli are hypersensitive and will give a positive skin test, but I have failed so far to find any other experiments with dead tubercle bacilli but those which I [63] reported, dealing strictly with tuberculin hypersensitiveness as demonstrated by the tuberculin skin test and the relationship of such hypersensitiveness to immunity.

For this reason, in the fall of 1920 the study of the immunity obtained with dead tubercle bacilli was undertaken. The object of these experiments was, first, to make a systematic study of dead tubercle bacilli in order to produce an allergic state, as demonstrated by the intracutaneous reaction, and, second, to determine the degree of immunity following their injection. During the five years thousands of guinea-pigs were used in carrying on these experiments. The following method was adopted:[63] Human tubercle bacilli, H_{37}, were cultivated on ordinary broth mediums. After eight weeks the growth was collected by filtration through paper, desiccated and then triturated in a mortar into a fine suspension with physiologic sodium chloride solution. The hydrogen ion concentration was adjusted to p_H 6.8. The suspension was standardized, so that 1 cc. contained 5 mg. of dry bacilli. This was put in small ampules and heated at 100 C. in a water bath for one hour. Animals of various ages and various weights were used to determine the most suitable age and weight for such experiments. It was soon found that guinea-pigs of from 350 to 400 Gm. were most suitable, and a total amount of approximately 7.5 mg. of dead bacilli in three periods, four days apart, was the favorable dosage. The intraperitoneal route was found to give the most effective result. Animals so treated lost a little weight after each injection, but as soon as the injections were stopped a gradual increase was noticed. From ten to fifteen days after the last injection of dead tubercle bacilli, a definite, positive, intracutaneous skin reaction could be elicited by a 5 per cent dilution of old tuberculin. The reactions varied in intensity and were strongest from three to four weeks after the last sensitizing injection. The majority of the animals gave a reaction from 20 to 25 mm. in area, well defined, with erythema and induration, and resulting in a big necrotic center. The skin hypersensitiveness persisted for 470 days [64] in some of the animals studied. At the end of this time the reaction was somewhat feeble but nevertheless definitely positive.

My next step was to find out how stable this suspension of tubercle bacilli was. Ampules were prepared by the method described and sterilized in an autoclave at 15 pounds pressure for one-half hour. Even after such destructive treatment of the bacilli, the animals inoculated responded positively to the tuberculin skin test.

Having convinced myself that skin hypersensitiveness could be established with the use of dead tubercle bacilli, I attempted [65] to find out if various other allergic phenomena could be observed in animals treated with dead tubercle bacilli. Such are the pleural and peritoneal exudation as shown by the phenomena of Paterson [66] and Pfeiffer; also the Koch intracutaneous phenomenon [67] and the reaction in the testis.[68] In every instance the allergic reactions were identical with those described when living organisms were used.

Lastly, my aim was to determine what degree of resistance to infection could be established in animals treated with dead tubercle bacilli.[69] In experiments of this nature there are many errors which may prevent one from drawing a definite conclusion, of which I shall make note later. Four hundred animals were used for the study of the immunity produced with dead

56. Loeffler, F.: Deutsche med. Wchnschr. **39:** 1225, 1913.
57. Langer, H. Klin. Wchnschr. **3:** 1944 (Oct. 21) 1924.
58. Fedders: Deutsche med. Wchnschr. **51:** 1659 (Oct. 2) 1925.
59. Raw, Nathan: Brit. M. J. **1:** 594 (April 23) 1921; Practitioner, **108:** 229 (April) 1922; Brit. M. J. **2:** 102 (July 19) 1924; Proc. Roy. Soc. Med. (Sect. Compar. med.) **18:** 25 (July) 1925.
60. Mantoux, C., and Moussu, M.: Compt. rend. Acad. d. sc. **147:** 502, 1908.
61. Römer, P. H.: Beitr. z. klin. d. Tuberk. **14:** 1-35, 1909.
62. Baldwin, E. R.: Tr. Nat. Ass. Study & Prev. Tuberc., 1911, p. 352.
63. Petroff, S. A.: Am. Rev. Tuberc. **7:** 412 (Aug.) 1923.
64. Petroff, S. A.: J. Immunol. **9:** 309 (July) 1924.
65. Petroff, S. A., and Stewart, F. W.: J. Immunol. **10:** 677 (July) 1925.
66. Paterson, R. C.: Am. Rev. Tuberc. **1:** 353 (Aug.) 1917.
67. Koch, R.: Deutsche med. Wchnschr. **17:** 101, 1891.
68. Long, E. R.: Am. Rev. Tuberc. **9:** 215 (May) 1924.
69. Petroff, S. A., and Stewart, F. W.: J. Immunol. **12:** 97 (Aug.) 1926.

tubercle bacilli, and the work investigated continued through a period of four years. Two hundred animals were inoculated at various times with dead tubercle, and after the development of skin hypersensitiveness were infected with H_{37}, a virulent strain of tubercle bacillus of human origin. At the same time, a like number of controls of approximately the same age and weight were used. All infecting inoculations were made subcutaneously, the dosage varying from 0.001 to 0.004 and in some instances 0.01 mg. When tabulating my results at the end of the experiment, I had only ninety-seven sensitized and ninety-six controls which could be used for analyzing my results. Most of the animals died either at the preallergic stage or during the sensitization period, with the exception of a few which died after infection. For this and other reasons, I adhered to a rule that only animals living fifty days or longer after the infection should be included in such a study. In summarizing my results I found that the average days of life in the ninety-seven sensitized animals was 193 and that of the controls 147. In other words, the sensitized animals outlived the controls by an average of forty-six days. The gross appearance at the autopsy also presented a different picture in the two series. There was much more macroscopic tuberculosis in the controls than in the sensitized animals.

This is not a remarkable result, but it clearly established in my mind that an increased state of resistance in healthy animals can be created with the injection of dead tubercle bacilli. It is obvious that the resistance established was only relative, not capable of warding off the massive infection. A study was made to determine the number of infecting bacilli that could be used to advantage in such experiments, by tracing the local reaction after their inoculation in animals sensitized with dead tubercle bacilli.

It has been known for a long time that the allergic reaction is seen in the eye to much better advantage than in the skin or in concealed organs. A series of fifty guinea-pigs were therefore sensitized with dead tubercle bacilli. After the development of skin hypersensitiveness, ocular inoculation of living, virulent organisms was made directly through the center of the lens into the vitreous humor. This inoculation was followed by a slight chemosis, mild conjunctivitis with photophobia due to the trauma of the injection. This, however, soon subsided. The animals were killed at various intervals, and histologic studies were made of the eyes and various lymph nodes in an effort to trace the path of the tubercle bacilli in the sensitized and control animals. The results were very interesting. The sensitized animals were not entirely free from tuberculosis, but when they were compared with the controls it was evident that the allergic state prevented the rapid dissemination of the virulent organisms. If the animals were not killed, eventually they would have died of generalized tuberculosis, as the sensitization did not wholly prevent an infection but retarded the dissemination of the organisms. The progress of the disease in the sensitized was not as rapid as in the controls. From the histologic studies it was noted that when large numbers of organisms (approximately 160,000) were inoculated into the anterior chamber of the eye, in the sensitized animals, because of a local allergy, some of the organisms became fixed, preventing their further progress or dissemination. They remained in this location for some time, in all probability increasing the allergic state. Some of the organisms were carried further on to the regional lymph nodes, the posterior auricular, where they were again arrested; others which escaped were carried on to the cervical and then to the bronchial lymph nodes, and thence through the body. Had a minimal infecting dose or perhaps tenfold, or even a hundredfold of that dose been inoculated, I believe that the results would have been much more striking.

This, and many other experiments in which vaccination with dead and living bacilli was compared, have shown that dead tubercle bacilli can and will protect an animal against an infecting dose and not a massive infection and that there is no basis for the assertion that dead bacilli do not confer immunity (Selter,[53] Dold[54]).

COMMENT

I shall briefly discuss the advantages and disadvantages of the various methods offered for vaccination.

The method of vaccination with living, virulent tubercle bacilli affords a means whereby immunity can be set up with apparently a very small amount of material. The dosage can be so regulated that a massive infection can be avoided. A mild disease without any clinical manifestation is actually being produced. However, it must be remembered that in order to keep this immunity the inoculations must be continued. In other words, the focus with living organisms must persist for the continuance of a satisfactory immunization. It means that to obtain such immunity the price of actual infection must be paid (Loewenstein). And again, in dealing with virulent organisms, one never knows what may happen in the individual when he is subjected to intercurrent disease. Supposing an immunity has been established with living, virulent organisms, what will prevent the breaking down of this resistance and the dissemination of the tubercle bacilli to some distant part of the body which has lost its immunity?

There are not so many serious objections to the use of attenuated and avirulent tubercle bacilli for vaccines as to the use of living, virulent organisms. Recent reports are rather encouraging, and in the light of present knowledge as to the infecting dosage I am inclined to believe that the experimental results will be more impressive than those obtained in the past. From the work of Dixon,[11] Trudeau[12] and, more recently, Calmette and Guérin,[42] it may be concluded, first, that establishing a relative immunity with avirulent organisms in animals is apparently an easy task, and, secondly, that such immunity may last one year or more. But it is not yet certain that the avirulent organisms inhabiting the human or animal body will not mutate or change into virulent organisms. This brings up the question of mutation. I have been fortunate enough to study several types of tubercle bacilli (of known pedigree) such as K_1, R_1, H_{37} and the last offspring of BCG. There is a complete history of all strains since their isolation, and they have been cultivated under ideal conditions by competent bacteriologists. K_1 was said to be a strain of human origin isolated by Koch some forty-four years ago. It has lost its virulence for guinea-pigs, and attempts to restore it have failed. R_1 was isolated by Trudeau more than thirty-five years ago. It has also lost its virulence, and I have had the same failure in my attempt to restore it. H_{37} is an organism isolated from sputum by Baldwin some twenty years ago, and has retained its virulence since isolation. However, an

interesting and unexplainable diminution in virulence occurred about two years ago in some cultures of H_{37}. The virulence so diminished that in many instances it failed to infect the animals. Fortunately, an old culture of the same H_{37} behaved as previously. This also has been the experience of other workers.

I wish to call attention here to the possibility of error in mixing cultures when there are many organisms of which subcultures must be made. Could it be possible that a strain recently isolated would contain two types of organisms? (I refer especially to microbic dissociation.) Such has been the case with some other organisms. For instance, it has been repeatedly shown that a recent isolation of pneumococcus or Friedländer bacillus may contain two types of colonies, which have been called R and S, differing not only as to their biologic and cultural characteristics, but also in virulence. I believe that some similar thing may happen in cultures of tubercle bacilli, which may contain both virulent and avirulent forms. Under suitable conditions, the virulent organisms may be completely eliminated and, of course, the reverse may also take place. So little is known about the complete life cycle of the tubercle bacillus that speculation may lead one astray. The possibility of mutation cannot be denied, but I believe that to accomplish such changes a long time may be required. The most recent member in the family of the avirulent organisms is the B C G. It has been a virulent bovine bacillus but after apparently short cultivation on special mediums has become avirulent. It would be of interest to know what would happen to this organism if the egg medium was substituted for the special medium, and it was then passed through animals. If the B C G culture, which thirteen or fifteen years ago was isolated from a calf, was a bovine tubercle bacillus, it may be anticipated that after such manipulation in due time its virulence may be regained. Baldwin and Gardner,[70] in testing the virulence of R_1, were able to produce chronic generalized tuberculosis in three of five animals. Large doses were used. These authors state that the possibility of mixing the cultures or misplacing the animal must not be overlooked. More recently, Webb, Ryder and Boissevain [71] reported similar results in producing extensive disease in guinea-pigs with this organism. If this can happen with R_1, then sooner or later a similar change may occur with B C G.

In reference to the immunity produced with dead tubercle bacilli, I have offered nothing striking and no claims were ever made that the idea was original with me. The garment is the same old garment, only patched up with hypersensitiveness so that it can again be worn. The outstanding features which demand renewed attention are that anatomic changes set up by dead tubercle bacilli do not vary from those produced by living organisms (Prudden and Hodenpyl). General tuberculin hypersensitiveness did not vary from that of infected animals (Babes and Proca, Trudeau, Kinghorn, Theobald Smith and others). Skin hypersensitiveness could be set up with inoculations of killed bacilli (Baldwin, Bessau, Langer, Zinsser and Petroff). Various other allergic phenomena could also be demonstrated by this method of sensitization (Petroff and Stewart). In other words, the animals sensitized with dead tubercle bacilli do not vary from those infected, anatomically, allergically or immunologically. It is true that in order to produce the same intensity of reaction many times more dead tubercle bacilli than living organisms must be used, but it must not be forgotten that dead material does not propagate when injected into the body. A definite amount of material is inoculated, and when it is absorbed an additional amount must be added from time to time. With living organisms, it is another problem. No matter how small the dose of infecting bacilli is, there always will be plenty of organisms propagating to replace those used up.

The allergic state is not so transient as the critics would have one believe. It can remain for a long time. It has been my observation that it will remain for 496 days, while Crawford [72] noted it 560 days.

Here I would emphasize a point which I consider to be of major importance. A suspension of killed tubercle bacilli must not be compared with that of a preparation known as bacillen emulsion (B. E.). A suspension of tubercle bacilli consists of intact organisms suspended in physiologic sodium chloride solution having a hydrogen ion concentration of 6.8. I prefer this p_H because any organisms in such suspensions are most stable and are not readily racemised when heated. On the other hand, the bacillen emulsion is prepared from pulverized tubercle bacilli, small fragments of which can pass through a Berkefeld filter. Their action is different. The intact whole organisms do not diffuse so rapidly when inoculated into the body, while the bacillen emulsion, being composed of small fragments of the tubercle bacilli, can more readily diffuse and become absorbed. There is no question that the bacillen emulsion can also sensitize animals, but the sensitiveness does not persist as long in guinea-pigs as when they are sensitized with intact organisms. Following the inoculation of dead bacilli, the formation of a small, nonprogressive lesion ensues which can persist for some time without causing great discomfort. But if the dead tubercle bacilli can set up immunity, why is the experimental evidence submitted not adequate to establish this method in prophylactic immunization? Not a single experiment reported here, regardless of the method and material used, has been complete failure. Very often variation as to the extent of the disease and the average length of life in the animals has been noticed. What is the reason for only a partial success? Perhaps the most recent observations may offer enlightenment in clearing up this problem.

First and of the utmost importance, to my mind, is the dosage of infecting material used in testing the resistance of the animals, and second, the influence of intercurrent diseases.

The Dosage for Inoculation.—In testing the immunity it has been the common practice of all investigators in the preparation of the tubercle bacilli for inoculation to measure and select the doses by weight. This procedure is open to severe criticism. Suspensions of the organisms were not free from clumps, and there was no way of knowing the exact number of organisms in the suspension. During the inoculation, clumps being present, some animals received large amounts and others only a few organisms. Practically every worker has used too large doses of infecting material in testing immunity. From 0.001 mg. (40,000) to 5 mg. (200,000,000) have been used. I have demonstrated and more recently my work has been confirmed by Jennings, that ten virulent tubercle bacilli can readily

70. Baldwin, E. R., and Gardner, L. U.: Am. Rev. Tuberc. **5**: 429 (Aug.) 1921.
71. Webb, G. B.; Ryder, C. T., and Boissevain, C. H.: Am. Rev. Tuberc. **11**: 247 (May) 1925.
72. Crawford, A. B.: J. Am. Vet. M. A. **64**: 228-230 (Nov.) 1923-1924.

produce progressive disease in guinea-pigs. Such being the case, then a single animal was inoculated with enough organisms to infect thousands; in other words, completely breaking down the possibility of established resistance. Recovery from typhoid sets up an acquired immunity, but how many who have had typhoid, thus having immunity, are willing to swallow a whole culture of an agar slant?

The problem of preparing and counting the infecting organisms was solved by Jennings'[73] method, which can be applied in any experiments on immunity. The method consists in the preparation of a suspension of organisms in fifteenth molar sodium hydrogen phosphate solution filtered through two layers of Whatman filter paper and counted in a special counting chamber. The suspension can be diluted to any strength desired; it is stable and the organisms do not agglutinate. One must not overlook the fact that the portal of entry in such experiments as described must be a factor which influences to some degree the dissemination of the bacilli. Probably the most ideal entry is spontaneous infection; but as natural infection is not so common and uniform among small laboratory animals, some other method must be selected. Recently, Cummings,[74] in a review, discusses in detail the usual methods used for infection. If material is inoculated subcutaneously, it may enter directly into a small artery, the veins or lymphatic channel, or it may enter dense fibrous tissue or even muscle or a gland. Accordingly, these various channels may give entirely different pictures. The infection by feeding is liable to still greater fallacies, since there is no means of determining the exact number of organisms that can be absorbed by the intestines. Intraperitoneal and intravenous inoculations are too dangerous and produce very rapid progressive disease. The instillation of the inoculum into the conjunctiva, according to this author, although not free from criticism and errors, can produce lesions in the body without causing a local lesion. It seems obvious that the less trauma one produces in inoculation, the better will be the results, in comparison with natural disease. Perhaps the inhalation method would prove to be best if the dosage could only be determined.

Intercurrent Diseases.—The second factor—the influence of the intercurrent diseases that so commonly occur in small laboratory animals—is of equal importance but has escaped the attention of most investigators. In a recent study[69] it was pointed out that when there was a well established tuberculous disease in guinea-pigs, pneumonia did not occur, an observation which is analogous to that reported by clinicians that pneumonia is a rare disease in active tuberculosis. The unexplainable variation in the extent of tuberculosis in some of the control animals can now be explained. Invariably at autopsy sinusitis and infection of the middle ear, and no tuberculosis, could be found in animals which had been inoculated with a fatal dose of tubercle bacilli, all other organs appearing perfectly normal. In other words, where there was a chronic intercurrent disease there was no tuberculosis, and vice versa. This, however, depends on the dosage.[75]

CONCLUSIONS

In this fragmentary review of what has been done to devise some methods that can be used for prophylactic immunization, the laboratory investigator can only suggest and pass on to the clinician some principles or methods based on experimental data. The clinician, on the other hand, may accept or reject them. The objection has been raised that conclusions arrived at from experiments with small laboratory animals, animals having a short life, may not hold in human beings, in whom the development of the disease, in all probability, pursues a different course. Such an objection is absurd. There must be and there is individual variation of the reaction to the organism, but the basic principles of infection and immunity in tuberculosis are the same in animals and in human beings.

The fault with all experiments in tuberculosis has been an attempt to create an absolute immunity against infection with tubercle bacilli. This cannot be accomplished. Such immunity is not needed; a relative immunity which can prevent an infection with a small number of organisms is sufficient. I believe there are only a few cases in which the infection is due to a massive dose.

The immunity established with living, virulent organisms is effective, but the compensation paid for such an immunity is expensive.

Vaccination with avirulent organisms is a safer procedure than vaccination with virulent organisms, but it is not known what may happen to such organisms after they have been passed through the body several times.

With dead tubercle bacilli the immunity established is more than partial. Experiments so far have indicated this to be the case, and there is no danger in using such material.

The tubercle bacillus does not propagate outside the body. Its existence depends on the parasitic part it plays in the human body. When any type of living organism is used for vaccination, regardless of whether it is virulent or avirulent, the organism is not eliminated but instead a resistance is established in the host. The organism passing from its nonparasitic cycle in nature into the parasitic cycle in the human being or animal, where it may play a double rôle, may or may not cause disease. It may help the organism to propagate either as a parasite or a saprophyte, sooner or later finding its way out of the host into nature and acting as a menace to some other person or animal having less resistance. This chain of events may continue for a long time, causing changes which may alter the virulence of the organism, i. e., changing the avirulent or harmless organism into a virulent one.

But if the dead tubercle bacilli are used for immunization purposes, all the dangers cited are eliminated. Thus, I believe that dead tubercle bacilli or some of their derivatives can be used safely and effectively in immunizing the human race.

73. Jennings, F. B., Jr.: J. Infect. Dis. **39**: 310 (Oct.) 1926.
74. Cummings: Read before National Tuberculosis Association, Washington, D. C., October, 1926.
75. Branch: Personal communication to the author.

The Basis of Medicine and Surgery.—Physiology forms the basis of medicine and surgery. Until lately it was known in this university as the Institutes of Medicine, which, being interpreted, means the Foundations of Medicine; the term is still used in Trinity College, Dublin. . . . For the study of physiology a prior knowledge of three other sciences is essential. These are physics, chemistry and anatomy. The application of physics to physiology or biology is termed biophysics; that of chemistry, biochemistry. The one deals with the physical changes associated with the functions of the living body, the other with the chemical changes. But we cannot understand the working of a machine without a knowledge of its structure, and this is where anatomy comes in.—Sharpey-Schafer, Edward: *Lancet*, June 25, 1927.

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SATURDAY, JULY 23, 1927

THE PATHOLOGY OF OVERDOSAGE WITH PARATHYROID HORMONE

The well established demonstration of a lowered calcium content of the blood plasma as a consequence of parathyroid deficiency naturally led to the assumption of a functional relationship between calcium metabolism and the parathyroids. This is by no means the only sort of activity that has been assigned to these glandular structures; but as the estimation of calcium in the circulating fluid is a procedure that can be carried out with accuracy and affords something definite for consideration, this aspect of the subject has received more critical study. Several investigators have advanced knowledge through the added demonstration that suitable extracts of the parathyroids, introduced into the body, actually have a measurable effect on the concentration of the plasma calcium. This has afforded a concrete basis for the investigation of the parathyroid hormone. Collip has shown that the concentrated product of the acid hydrolysis of parathyroid glands, injected into animals in severe tetany following parathyroidectomy, quickly restores them to normal condition, at the same time raising their plasma calcium to normal level and holding it there longer than the administration of calcium salts can do, whether these are given by mouth or injected. Such animals can be kept free from tetany for months, though, if injection of the extract is stopped, tetany recurs within a day or two. Thus the requirements of "replacement" therapy, that is, the evidence that the alleged hormone represents the active principle of the parathyroid glands, have been satisfied.

It is not surprising that a product exhibiting such definite physiologic potency as is shown by the parathyroid extracts should have been requisitioned promptly for clinical application. There seemed to be a field for its use in many cases in which the administration of calcium salts had been practiced for therapeutic purposes. This applies, for example, to certain types of tetany and in lesser degree to alleged defects of calcification in the body. Early in his studies Collip warned against the possible dangers of overdosage with parathyroid hormone. The current view of their normal function, as Cameron [1] has recently reviewed it, is that the parathyroids elaborate an internal secretion which controls the formation of a nondiffusible calcium compound in the blood, and that this, by a series of interlocked equilibriums, keeps the diffusible calcium compounds of the blood to a constant ratio with itself. If the parathyroids function normally, the compound under their control will be kept at constant concentration and therefore the total blood calcium will remain constant. The slightly higher value for the plasma calcium of infants' blood suggests a more active parathyroid function.

If, on the other hand, the parathyroid hormone is administered in large doses and at repeated short intervals, the calcium of the blood is increased much above the normal level. When it is about twice normal, other symptoms intervene—atonia, profound depression, anorexia, ataxia, vomiting, bloody stools—and finally death ensues. The same increased blood calcium, and ultimately fatal ending, follow injections of the extract into the normal animal. So far no antidote has been found for these effects from overdosage; evidently, as Cameron insists, chemical control must at present be employed during the administration of the extract in clinical cases.

Some possible untoward effects of hypercalcemia induced by overdosage with parathyroid hormone have been ascertained by Hueper [2] at the Loyola University School of Medicine. They include metastatic calcifications in various organs, notably the thyroid glands, lungs, heart muscle, stomach, duodenum and kidneys. Hueper believes that the calcifications have their most marked injurious effect on the functions of the organs involved in the case of the renal structures. The gradually increasing calcification and destruction of the tubular epithelial cells, and the formation of calcium casts in the lumens of the tubules blocking the drainage of the urine from the kidney, impair the renal function more or less and induce a retention of various components in the blood, with deleterious effects for the organism. In view of his experimental results one can well appreciate Hueper's warning against ill advised therapeutic use of the parathyroid hormone. Its artificial introduction into the human body, he insists, is connected with certain dangers, and should not be undertaken without a proper control of the blood calcium level to avoid alterations, in the organs, that may become definite, irreparable and fatal. According to Hueper, an increase of the blood calcium to from 10 to 15 mg. per hundred cubic centimeters over a longer period of time may be produced without greater risk for the patient. But, he adds, the elevation of the blood calcium above this level will probably soon cause

1. Cameron, A. T.: The Biochemistry of Calcium, Canad. M. A. J. **16**: 753 (July) 1926.
2. Hueper, W.: Metastatic Calcification in the Organs of the Dog After Injections of Parathyroid Extract, Arch. Path. **3**: 14 (Jan.) 1927.

dangerous symptoms of the circulatory system, the stomach and the kidneys. Preparations of the parathyroid hormone should not be employed without discriminating intelligence.

THE UNCERTAINTIES OF PUBLIC HEALTH EFFORTS

The doctrine that public health is a purchasable entity no longer is difficult to promote. The evidences of the efficacy of preventive medicine and the good health propaganda of recent years are becoming apparent in many ways. The resistance against expenditures for the protection of health as well as the care of the unfortunate sick is breaking down. Almost every community has begun to insist on a certain amount of "health service," even though this may as yet represent only a minimum standard. The principle that the safeguarding of the life and health of the people is, in some measure at least, a governmental responsibility is taking root in our population. Accordingly, this is a propitious time for promoting the enterprises of public hygiene and, in the words of a vigorous advocate, of "selling public health."

Good salesmanship implies an ability to demonstrate the value of the product under consideration, or at least of presenting a fairly convincing argument in favor of its presumptive advantages. The promotion of a market for the ventures in the domain of the public health is continually exposed to the difficulty of clear-cut demonstrations of the actual virtues of specific projects. One may speak glibly yet truthfully about the reduction in death rates in general, and notably in connection with certain diseases, such as typhoid and diphtheria. One may laud the decreased infant mortality and the more effective treatment of many distressing maladies. But when the custodian of the public funds or the taxpayer himself asks whether a definite proposed expenditure is likely to accomplish directly measurable results, whether his dollars are fairly certain to bring about a determinable decrease in morbidity or a definable eradication of disease, the direct answer to the queries is by no means always to be given.

The time has arrived, therefore, for urging support of many public health measures recognized as rational, even though, as Ferrell [1] recently remarked, before the Conference on Public Health in Chicago last March,[2] the basis of measuring tangible results is not clear-cut. Welfare results are not infrequently incident to hygienic projects planned for other purposes. As Mendel [3] recently declared, there is too little realization of the fact that contributions of large practical importance have not infrequently been the by-product of research rather than the immediate goal of the investigator. An investment in reasonably formulated activities is frequently a gamble, yet a legitimate financial venture. Years ago the late W. T. Sedgwick demonstrated that the better sanitary control of watersheds and their potable waters resulted not only in the reduction of the incidence of typhoid, with which the efforts were primarily concerned, but also in a measurable decrease in other apparently coincident maladies. The theory that if children do not become otherwise ill they are less likely to develop tuberculosis justifies the efforts to "keep well babies well." Public confidence in health organizations and their possibilities is justified on general grounds with confidence in the ultimate good. Although, as Ferrell has remarked, it is not possible to evaluate accurately the influences that have produced the numerous benefits on record, it is reasonably certain that among contributing factors have been a broader and more accurate knowledge of diseases and of methods for their prevention and cure, a better educated public, better trained physicians, dentists and nurses, more adequately equipped hospitals, larger average earning capacity, higher and more hygienic standards of living, better diet and housing conditions and, emphatically, the work of health agencies, official and voluntary. The measurement of each influence is not an easy task; nor should this fact discourage any reasonable essay in the domain of the public health.

1. Ferrell, J. A.: Economics of Public Health, J. A. M. A. **89**: 77 (July 9) 1927.
2. Conference on Public Health, J. A. M. A. **89**: 118 (July 9) 1927.
3. Mendel, L. B.: Some Tendencies in the Promotion of Chemical Research, Science **65**: 555 (June 10) 1927.

FASHIONS IN RESEARCH

Enthusiasm for the new is not infrequently permitted to obscure the merits of that which has preceded it. A new method of treatment tends to displace its predecessors for a time until, not infrequently, the glamor of the supposed advantages is dimmed; whereupon the older tried procedures are occasionally restored to some of their former vogue. New drugs are acclaimed loudly until their limitations are discovered and they find their proper place in the physician's armamentarium. It was so with arsphenamine and a host of other compounds, each of which was expected to accomplish wonders, many of which have found favor, but none of which have in the long run met all the earlier expectations that the first exploitation aroused.

Something of this spirit of predilection for novelty sometimes pervades the atmosphere of research. In a recent address before the American Institute of Chemists, Prof. Lafayette B. Mendel [1] of Yale University touched on it in relation to prevailing tendencies in the field of chemical investigation. Referring to the progress of the newer physical chemistry, "formulated with new viewpoints, employing novel methods, and armed with all the enthusiasm that belongs to a vigorously growing venture," he expressed concern lest the former prestige and deserved popu-

1. Mendel, L. B.: Some Tendencies in the Promotion of Chemical Research, Science **65**: 559 (June 10) 1927.

larity of organic chemistry be eclipsed by the younger physical chemistry, perhaps even to the extent of being in danger of real neglect by the oncoming students. Mendel remarked that some of the biochemical literature gives the impression that the broad field of the detailed composition and function of living structures is being envisaged from a somewhat narrow angle—one in which colloidal phenomena, ionic equilibriums, permeability factors, osmotic and surface forces furnish the chief basis for the outlook. Mendel notes that such biologic entities as cytoplasm and nucleus, chromosomes and vacuoles are little more than words to the biochemist. He believes that a constructive inroad into these unexplored recesses, an endeavor to discover the unrecognized organic compounds out of which the living cell, the morphologic background of protoplasm, the basis of life, is built up calls for the best endeavor of the organic chemist.

A comparable laudation of the progressive possibilities of certain phases of organic chemistry was also recently uttered by Wells [2] of the University of Chicago. In summarizing the accomplishments as well as the problems of the new immunology, his foremost thesis was that this science is primarily a branch of biologic chemistry and that there are problems of great interest and of the highest human importance awaiting solution by the chemist, either alone or in cooperation with the immunologist. After detailing some of the practical contributions, Wells frankly admits that the fundamental features remain to be established on a more specifically scientific basis. Our prospects of any great advance by means of improvement of the methods we now know and use, he writes, seem but slight. We must have a new method, and that is to be furnished by the joint action of the chemist and the immunologist. When we learn just what these mysterious protective agents are, how they act, and how to produce them artificially at will, we shall not have to depend on the dilute solutions of these agents that we can extract from a horse or can cause to develop in a man's own blood, but we can give him as much as he needs of the active agent that has been prepared by synthetic chemistry. That, Wells concludes, seems to be the goal we must work toward; and the organic chemist who is studying the linkage of pyrroles, piperazines and amino-acids is probably quite as much a builder of the future immunology as the man who is investigating the serum reactions of the meningococcus. Emil Fischer and Kossel, he adds, through their study of the composition of the proteins, are perhaps quite as directly the founders of the future immunology as Metchnikoff, Ehrlich and Bordet, who worked more directly with the living processes of infection and resistance. As Mendel has remarked, exclusive "fashions" in research have their limitations.

2. Wells, H. G.: Immunology as a Branch of Chemistry, New York, Columbia University Press, 1927.

Current Comment

UNITED STATES LEADS IN PROPRIETARY MEDICINE

The United States is the world's largest producer, consumer and exporter of prepared medicines, according to a report just made available by the Department of Commerce. The value of "patent medicine" and druggists' preparations manufactured in this country in 1925 was nearly $320,000,000, and $20,000,000 was the value of exports. The total import trade of the world in medicinals was $110,000,000, of which two thirds represented prepared medicines and medicinal specialties. British exports were 66 per cent of those of the United States, French exports 60 per cent, while German shipments were approximately 50 per cent of those of the United States. Eighty per cent of the drugs exported from the United States go to fifteen English and Spanish speaking countries. The figures presented by the Department of Commerce help to correct some impressions heretofore prevailing relative to this trade. It has long been thought that Germany dominated the proprietary medicine markets of the world. Evidently the United States has progressed greatly in this field since the World War. Unfortunately, the scientific value of the products has not been demonstrated in most instances to be wholly meritorious. One may well wonder how much of this trade includes drugs without merit and "patent medicines" that are harmful.

BIRDS OF A FEATHER

On September 22 and 23, according to an announcement just issued, the second annual convention of the Koch Cancer Foundation will take place in Chicago, one of the meetings being a joint session with the American Association for Medico-Physical Research. No doubt Chicago merits this visitation as a return for its sins. In 1925, THE JOURNAL spoke briefly relative to the American Association for Medico-Physical Research, a society organized in 1911 by the outstanding quack of the century, Albert Abrams. The organization was an outgrowth of the American Association for Spondylotherapy, the term "spondylo" referring to the spine and not to the good old American word "spondulix." In this peculiar organization are assembled some of the conspicuous exploiters of borderline medicine in this benighted land. For example, in 1925 the chairman of the section on radiology was Mr. George S. Foden, a practitioner of electronic medicine, who read a paper on "The Eye as an Index Factor to Personality"; osteopath Francis A. Cave, an honorary vice president of the Medical Liberty League, also devoted himself to electronic practice; William Howard Hay, chairman of the section on advanced medicine, had a diabetic cure and one for hay-fever; A. C. Geyser is a promoter of the "tricho system"; George E. Harter is the founder and director of the Defensive Diet League; E. M. Perdue has a cancer cure. And then there is Koch—William F. Koch, M.D., Detroit, Michigan—inventor of the Koch syn-

thetic antitoxin for the cure of cancer. According to his bulletin, some three hundred physicians will gather to discuss the use of the Koch remedy in cancer. But one meeting is to be a joint meeting with the distinguished members of the American Association for Medico-Physical research. The Koch representatives should add tone to this remarkable assemblage.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Radium Recovered After Passing Through Furnace.—A tube of radium, valued at $4,500, was lost about June 1, at the Coffee Hospital, Sheffield, and after an intensive search was found by means of an electroscope in the city dump. The radium had passed through the furnace at the garbage disposal plant, and had been buried in the refuse about three weeks. The search was conducted by an insurance company which had insured the hospital against the loss of the radium.

ARKANSAS

Personal.—The governor has appointed Drs. William W. Verser, Harrisburg, William W. York, Ashdown, and William A. Montgomery, Atkins, to fill the vacancies on the board of medical examiners of the Arkansas Medical Society.——Dr. Joseph P. Runyan has resigned as superintendent of the Baptist State Hospital, Little Rock.

Testimonial Dinner to Retiring Dean.—About seventy-five friends attended a testimonial dinner given by the faculty of the University of Arkansas, at Little Rock, June 28, in honor of Dr. Morgan Smith, who retired after many years of service as dean of the medical school, June 30. Dr. Frank Vinsonhaler, the new dean, was toastmaster, and among the speakers were Mr. E. J. Bodman of the board of trustees of the university, and Drs. Wells F. Smith, Anderson Watkins, William R. Bathurst and Shelbey B. Hinkle. Dean Smith was presented with a silver water pitcher.

Society News.—Dr. J. M. McLendon has been elected president of the Lincoln County Medical Society for the ensuing year.——The physicians of Batesville gave a banquet at the court house, June 13, to the Independence County Medical Society. The speakers on the scientific program included Drs. John M. Hooper, G. T. Laman, Lorenzo T. Evans and Frank A. Gray.——Dr. J. H. Eugene Rosamond, Memphis, Tenn., addressed the Mississippi County Medical Society, Wilson, recently, on "Diagnosis of Tuberculosis in Children."——The nurses of the Camden Hospital served a banquet to the Ouachita County Medical Society at the hospital, May 5; the report of the hospital's work since its opening in 1925 was made; at the June meeting, the Columbia County Medical Society was the guest of the Ouachita County Medical Society.

CALIFORNIA

Society News.—Dr. Manuel L. Fernandez was host to the Contra Costa County Medical Society, recently, at his home in Pinole.——Dr. William D. Sansum, Santa Barbara, addressed the Kern County Medical Society, recently, on "Diet and Insulin."——Dr. Edward W. Beach addressed the Sacramento County Medical Society, recently, on "Some Common Kidney Lesions."——Dr. Edward Bancroft Towne, San Francisco, addressed the Stanislaus County Medical Society, recently, on neurosurgery.——Among others, Dr. Henry J. Ullmann addressed the Santa Barbara County Medical Society, June 13, on "Colloidal Lead and Radiation in the Treatment of Cancer," and Dr. Irving Wills on "Ureteral Stone Extraction."——Dr. William J. Kerr has had made 500 reprints of the Hippocratic Oath for presentation to senior students at the University of California Medical School; the translation is from that made of the works of Hippocrates by Dr. Francis Adams, first published in 1849 by the Sydenham Society, London. The reprints are reproduced on handmade paper.

University Establishes Institute of Child Welfare.—The president of the University of California has announced the establishment of an institute of child welfare in the university. The Laura Spelman Rockefeller Memorial, New York, has made liberal appropriation for its maintenance for a period of six years, beginning this month. The California Congress of Parent Teachers' Associations has pledged to defray during the six year period the rental charges of such off-campus housing space as the institute will require. The object, as the name indicates, is to promote the welfare of children, and through them the welfare of the human race. For two years a large committee of professors has considered the establishment of an institute within the university. In the medical school, especially in the departments of psychology, hygiene and biology, the welfare of children has been studied for many years but not on a cooperative and coordinated basis. The regents of the university have appointed Dr. Herbert R. Stolz to be director of the institute. Dr. Stolz graduated from Stanford University School of Medicine in 1914; for about three years, he was Rhodes Scholar at Oxford University and was director of physical education at his alma mater. He served in the army during the World War, was state supervisor of physical education in California and more recently was assistant superintendent of public instruction. Harold E. Jones, Ph.D., of Columbia University, New York, has been appointed director of research in the institute. Dr. Jones received his doctor of philosophy degree from Columbia in psychology. He was a fellow at Woods Hole for a year, director of the undergraduate staff and laboratory at Columbia for four years, psychologist to the Children's Hospital, New York, examiner to the municipal civil service commission, and executive officer of the Child Development Foundation, operating under the support of the Laura Spelman Rockefeller Memorial.

CONNECTICUT

Personal.—Dr. Philip D. Woodbridge, Portland, has gone to the Mayo Clinic, Rochester, Minn., as first assistant in the section on anesthesia.——Dr. Alphonso G. Garcia, Waterbury, has been appointed health officer of Middlebury.——Dr. Maude W. Taylor, Hartford, has been elected president of the Woman's Medical Society of Connecticut for the ensuing year, and Dr. Amelia V. Tuttles, New Britain, secretary-treasurer. The honorary president is Dr. Ellen H. Gladwin, Hartford.

Memorial Roentgen-Ray Building.—The Hartford Hospital recently dedicated a special building for the roentgen-ray laboratory which provides space also for the cystographic and photographic departments, and is known as "The Capewell Memorial X-Ray Building." Funds for the erection of this addition to the hospital were provided by the family of Mr. George J. Capewell, founder of the Capewell Horse Nail Company, who died in 1919. The former roentgen-ray department of the hospital was so constructed that it was easily adapted to the needs of the operating floor on removal of the laboratory to the memorial building. The main floor of the building has 3,875 square feet. All portions of the building which are subjected to high voltage currents are insulated with lead, lead glass and barium plaster on the ceilings and walls. It is constructed of Connecticut brown-stone, is fire-proof and harmonizes with the other hospital buildings.

CHICAGO

Personal.—Dr. Harry E. Mock, assistant professor of surgery, Northwestern University Medical School, was awarded the honorary degree of doctor of science at the ninety-third annual commencement of Franklin College, Franklin, Ind.——Dr. Herman L. Kretschmer has been elected a corresponding member of the Hungarian Urological Association.——William H. Taliaferro, Ph.D., professor of parasitology, University of Chicago, has returned from a three months' trip to Central America, spent in working on the serology and immunology of malaria and intestinal worms at the hospital of the Tela Railroad Company in Honduras. Dr. Taliaferro has been invited to the School of Tropical Research, University of Porto Rico, during the winter quarter, 1928, as visiting professor of parasitology.

The Largest Local Medical Society.—In his annual report, the secretary of the Chicago Medical Society notes that the society has a total membership of 4,164, and that it is the

largest local medical society in the world. The central society held twenty-nine meetings during the year, which were addressed by sixteen out-of-town speakers and a number of its own members. The council held nine meetings and the board of trustees ten. A nurses' registry was established during the year, so that members can now secure graduate nurses for both twelve and twenty-four hour duty as well as practical nurses; the registry has proved successful beyond expectation. The society has moved to the new Medical and Dental Arts Building, Wabash Avenue and Lake Street, where it has a permanent home and where future meetings and dinners will be held.

New Department of Medicine.—The personnel of the department of medicine at the new medical school and hospital of the University of Chicago on the Midway is practically complete for the year 1927-1928. The members are as follows:

Franklin Chambers McLean, Ph.D., M.D., professor of medicine.
Frank Billings, ScD., M.D., professor emeritus of medicine.
Oswald H. Robertson, M.D., professor of medicine.
Joseph Almarin Capps, A.M., M.D., clinical professor of medicine.
Joseph Leggett Miller, M.D., clinical professor of medicine.
Friedrich Hiller, M.D., associate professor of medicine.
Paul C. Hodges, Ph.D., M.D., associate professor of roentgenology.
Samuel William Becker, M.D., assistant professor of dermatology.
Louis Leiter, M.D., Ph.D., assistant professor of medicine.
Charles Phillip Miller, Jr., S.M., M.D., assistant professor of medicine.
Walter L. Palmer, Ph.D., M.D., assistant professor of medicine.
Emmett Blackburn Bay, M.D., assistant clinical professor of medicine.
Ruth E. Boynton, M.D., assistant clinical professor of medicine.
L. Jean Bogert, Ph.D., instructor in medicine.
Chester Scott Keefer, M.D., instructor in medicine and resident physician.
Margarete Meta H. Kunde, Ph.D., M.D., instructor in medicine.
Perry Y. Jackson, Ph.D., instructor in medicine.
Robert G. Bloch, M.D., clinical instructor in medicine.
Anne S. Bohning, M.D., assistant in medicine and assistant resident physician.
John Murray Steele, M.D., assistant in medicine and assistant resident physician.
Henry Nelson Harkins, M.S., research assistant in medicine.
Albert L. Tanenbaum, research assistant in medicine.

INDIANA

Dr. Barnhill Retires from Teaching.—After about thirty-eight years' service as a teacher in Indiana University School of Medicine and its predecessor, and for the last four years professor of surgery of the head and neck, Dr. John F. Barnhill, Indianapolis, has announced his retirement from active teaching duty. He will remain with the school in an advisory capacity and continue in the practice of medicine.

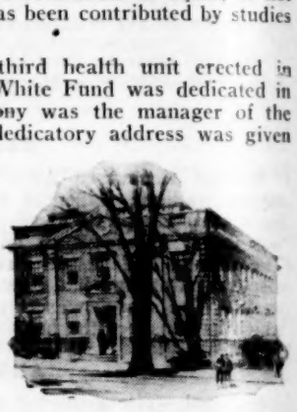
LOUISIANA

Assistance of Counties in Health Work Requested. — The state of Louisiana has agreed to assist the parishes to put into effect health programs in the inundated parishes, and the Liquidation Board has arranged to use $62,000 for this purpose, which will be supplemented by funds from the U. S. Public Health Service, the International Health Board and the state board of health. The parishes are also requested to assist in the financial arrangements, and a schedule has been drawn up of the amount necessary for these programs for each parish. The program for Louisiana and adjoining states was outlined at a conference held in New Orleans, June 5, attended by representatives of the Red Cross, the U. S. Public Health Service, the International Health Board and health officers from the seven states. It is proposed to establish a health center in each parish with a full-time health officer, a public health nurse, sanitary inspector and an office attendant; and in order to obtain a dollar for each dollar appropriated by the other agencies, every parish must put up its quota. In announcing this plan, the Louisiana State Board of Health recognizes that every parish must have a board of health in accordance with the state law, but that these boards are not adequately financed, their administration is remote from the people and they are not aware of the people's problems. The health center which it is proposed to establish in the parishes will, according to the board, correct this fault. These centers will be open to the individual for actual help or advice, and he may take his problems of hygiene for the school and home to them. The American Red Cross in a statement, July 1, spoke of these plans generally, stating that ninety-two full-time county and parish health units in the seven states affected by the flood have been planned, and that the Red Cross is spending about $500,000 in supplementary service to the state health departments in the conducting of emergency health and sanitation programs in the reserve camps, and for a thirty day clean-up program in the towns and villages. The Red Cross is limited to emergency phases of health and sanitation in the present disaster, and the amount allocated to the Red Cross in this more permanent health program will be taken over by the U. S. Public Health Service. The state board considers this a great opportunity offered to the parishes to safeguard health.

MASSACHUSETTS

Statistical Study of Mental Disease.—The Massachusetts Department of Mental Diseases is organizing a new statistical approach to the study of morbidity in the field of mental disease, and has delegated the work to Dr. Neil A. Dayton, director of the division of mental deficiency. Dr. George M. Kline, commissioner of mental diseases, is of the opinion that an analysis of the mass data which a centralized state system makes available will result in information of equal, if not greater, value than that which has been contributed by studies of individual cases.

Boston Health Units.—The third health unit erected in Boston by the George Robert White Fund was dedicated in June. Presiding at the ceremony was the manager of the fund, George H. Phelan; the dedicatory address was given by Dr. Haven Emerson, professor of public health, Columbia University College of Physicians and Surgeons, New York; other speakers were the mayor of the city, the city health commissioner, Dr. Francis X. Mahoney, the state health commissioner, Dr. George H. Bigelow, Dr. Edward F. Timmins, president, South Boston Medical Society, and Dr. J. W. Bartol, president of the Boston Health League. Although erected through a bequest that provided for the construction of public betterments in the interest of the people, these health units, after being erected, are turned over to the city of Boston to be operated and maintained. They function as local headquarters not only for the various activities of the city health department which operates them, but also for the activities of certain private social agencies. Boston now has a total of five health units, and at least two more are planned. Health centers began to develop in Boston in 1916, when the Blossom Street unit was opened. This unit was supported by the city department of health, and the following agencies in the district joined in the work: the Milk and Baby Hygiene Association, the Instructive District Nursing Association, the Consumptives Hospital Department, the Hebrew Federated Charities and the visiting physician of the Boston Dispensary. Previously, these organizations had been functioning under different roofs. The North End Health Unit, which was the first erected under the George Robert White Fund, now has a decentralized preventorium conducted during the summer months for selected children who have been exposed to tuberculosis and are undernourished. There is a unit in east Boston and another, the last to be erected, at Dorchester and West Fourth streets in south Boston. The George Robert White Fund decided to erect a chain of health units where they appear to be most needed.



MICHIGAN

Safeguarding Rural Water Supplies. — Representatives of the Michigan Department of Health started out, June 1, to examine the water supply along the roadside on a route south of Lansing to the border, then west to White Pigeon, then to Petoskey and then down the east side of the state. A follow-up man went two weeks later over the same route placing the approval signs of the department on the supplies

of waters which had been found safe, and making recommendations for improvement of resources which were not up to standard.——In Ionia County, the county health cooperative committee has collected samples of water from every one of the 121 rural school wells in the county for examination by the state laboratory.

Society News.—Dr. Melvin D. Roberts addressed the Houghton County Medical Society, Calumet, recently, on "Examination and Care of Aviation Pilots."——Among others, Dr. Perry C. Robertson, superintendent, Ionia State Hospital, addressed the Ionia-Montcalm County Medical Society, June 9, on "Malaria Treatment of Syphilis of the Central Nervous System."——Dr. Lloyd E. Verity, Battle Creek, addressed the Berrien County Medical Society, recently, on "Nephritis."——The Kalamazoo Academy of Medicine and the Calhoun County Medical Society played a golf match at Battle Creek, June 7, at the Battle Creek Country Club, where a chicken dinner was served and a scientific program was furnished by the Kalamazoo physicians, Dr. Ward E. Collins speaking on "General Management in Diseases of Children"; Dr. David E. Squiers, "Chest Examination of Children," and Dr. Rollin D. Thompson, "Recent Phases in Treatment of Tuberculosis in Children."

MISSOURI

License Revoked.—The Missouri State Board of Health revoked the license of Dr. James Barnett Graham, Jameson, June 22, for a period of one year, it is reported, following a hearing on charges of drunkenness and unprofessional conduct.

State Medical Election.—At the annual meeting of the Missouri State Medical Association, Sedalia, May 2-5, Dr. Frank G. Nifong, Columbia, was elected president for 1927-1928, and Dr. Frank I. Ridge, Kansas City, president-elect. Dr. Edward J. Goodwin, St. Louis, the secretary, will be the delegate to the American Medical Association, 1927-1929.

Work of Woman's Auxiliary.—In the report of the president of the Woman's Auxiliary of the St. Louis Medical Society for the last year, the retiring president, Mrs. Henry McClure Young, notes that the auxiliary has purchased fifty tables and a supply of china, glassware, silver and linen for the new building of the St. Louis Medical Society, and has secured two excellent ice boxes as gifts from Drs. Charles S. Rehfeldt and Meyer Wiener, and that a gift of $5,000 to the building fund was made through the auxiliary by Dr. Frank J. V. Krebs in memory of his wife, who was one of the organizers of the auxiliary. The cooperative work with other organizations included a donation of $200 to the state department of physical education to carry on health work in rural schools, and the provision of workers for the booth of the state board of health at the Sesqui-Centennial Exposition, and of about thirty workers to register patients and distribute literature for the society for the prevention and cure of cancer. Furthermore, the officials furnished rooms to about 125 delegates to the Missouri Association for Mental Hygiene.

Gifts to Washington University Medical School.—It was announced at the annual commencement of Washington University, June 7, that the medical school had received a gift of $500,000 to the endowment fund jointly from the General Education Board, New York, and Robert S. Brookings, president of the university corporation to reimburse the university for expenditures on the affiliated Barnes and Children's hospitals. This gift from the General Education Board, the exact amount of which was not announced, makes the total gifts from the board to the medical school now about $5,000,000. Other gifts to the school, which have been previously announced, include $1,000,000 given by the General Education Board and Edward Mallinckrodt and his son for an institute of radiology; $650,000 as endowment for work in obstetrics and pediatrics in connection with the new St. Louis Maternity Hospital; $1,000,000 from the estate of the late Mrs. W. N. McMillan, St. Louis, for the McMillan Eye, Ear, Nose and Throat Hospital, and $50,000 from the General Education Board for the development of work in surgery of the chest.

NEW JERSEY

Society News.—The staff of the Hackensack Hospital gave the scientific program before the Bergen County Medical Society, June 14; Dr. George W. Finke, Hackensack, read a paper on "Meckel's Diverticulitis," and Dr. Spencer T. Snedecor, Hackensack, on "Work of the Department of Physical Therapy." Dr. David Corn, Ridgefield Park, presented a case of rupture of the uterus.

Layman Succeeds Physician as State Health Director.—Mr. David C. Bowen, Asbury Park, has been elected director of the state department of health for four years to succeed Dr. Henry B. Costill, of Trenton, whose term expired, July 4. Mr. Bowen was chief of the local health administration in the state department of health, and has been identified with the health department for many years. Dr. Costill was appointed state director of health in 1924 to serve the unexpired term of Dr. Jacob C. Price. Dr. Costill is a former president of the Medical Society of New Jersey, and a former member of the state board of medical examiners.

NEW YORK

Health at Buffalo.—Telegraphic reports to the U. S. Department of Commerce from sixty-seven cities with a total population of about 29 million, for the week ending July 9, indicate that the highest mortality rate (23.5) was for Buffalo, and that the mortality rate for the group of cities as a whole was 11.2. The mortality rate for Buffalo for the corresponding week last year was 12.8, and for the group of cities, 11.6.

Annual Health Officers' Meeting.—The annual conference of health officers and public health nurses of the state of New York was held at Saranac Springs, June 28-30. Among the speakers scheduled were Alfred E. Smith, governor; Dr. James E. Sadlier, president of the state medical society; Dr. Louis I. Harris, commissioner of health of New York City; Dr. Sanger Brown, 2d., assistant commissioner, state department of mental hygiene; Edward McKernon, of the Associated Press, and Dr. William H. Park, director, research laboratories, New York City Department of Health. There were conferences of district state health officers, of state supervising nurses, and joint conferences of both classes of workers, a meeting of the state sanitary officers' association, and a social meeting.

Society News.—At the annual meeting of the Cattaraugus County Medical Society, Salamanca, May 17, Dr. Joseph P. Garen, Olean, was elected president, and Dr. Raymond B. Morris, Olean, secretary-treasurer. Dr. Myron E. Fisher reported a case of undulant fever. A committee on public health and public relations was appointed.——The Lake Keuka Medical and Surgical Association held its twenty-eighth annual meeting at Lake Keuka in Central New York State, July 14-15, under the presidency of Dr. Abraham H. Aaron, Buffalo. Besides a scientific program which was not announced at the time of this report, arrangements were made for speed boat races to be held both days to compete for the challenge cup offered by the association, as well as for the cups offered by the local yacht club. The association was organized about twenty-seven years ago by the Steuben County Medical Society at its summer meeting, and the idea has spread until twenty-two counties in central and western New York are in the association.——The semiannual meeting of the Schoharie County Medical Society was held, May 17, at Schoharie; Dr. Robert E. Plunkett of the state department of health spoke on "The Family Physician and Tuberculosis"; Dr. Raeburn J. Wharton, Johnson City, on "Practical Points for the General Practitioner in Diagnosis and Treatment of Disease in Childhood"; Dr. James E. Sadlier, president of the state medical society, addressed the meeting.——The Jefferson County Medical Society held an outing, June 9, at the Carlowden Club in Lewis County. The afternoon was spent at golf and baseball; following the dinner, Dr. Francis E. Du Bois, New York, spoke on "The Interpretation of Hematuria."

New York City

Field Training for Reserve Officers.—About 150 physicians and dentists, members of the officers' reserve corps, left, July 2, for Carlisle Barracks, Pa., for fifteen days' special training in field work. The units called into active duty for this period were the 302d, 303d, 342d, 350th, 361st and 363d medical regiments, the Eleventh Surgical Hospital and the Sixteenth Evacuation Hospital. This, the *New York Medical Week* notes, is the first opportunity for training as a single unit that the medical troops have had since their organization as part of the reserve corps.

Million Willed to St. Luke's Hospital.—Probating of the will of the late Mrs. Mary Anna Fitz-Gerald, May 26, showed that $1,000,000 had been willed outright to St. Luke's Hospital, and that the remainder of half of her $8,000,000 estate will revert to the hospital on the death of intervening heirs. Mrs. Fitz-Gerald willed to the hospital the vacant block bounded by Riverside Drive, One Hundred and Nineteenth and One Hundred and Twentieth streets and Claremont Avenue, and the parcel of land where her home stood

at One Hundred and Twentieth Street and the Drive which is now used for tennis courts. Seventy years ago, the New York *Times* states, this land was a part of the farm owned by her father, Eli White.

Personal.—Dr. Durward R. Jones, formerly epidemiologist of the South Dakota Department of Health, has been appointed assistant professor of epidemiology in the De Lamar Institute of Public Health, Columbia University, to succeed Dr. Alton S. Pope, who is now epidemiologist of the Chicago Health Department; Dr. Adelaide Ross Smith, recently physician to the New York State Industrial Board, has been appointed to succeed Dr. Frank G. Pedley, who will assume charge of the new department of industrial medicine at McGill University Medical School, Montreal, August 1. ——Edmund V. Cowdry, Ph.D., of the Rockefeller Institute for Medical Research, has returned from Tunis, Africa, where he spent several months in parasitologic studies.——Dr. Mark H. Williams was retired on a salary, June 30, after thirty-eight years' service as police surgeon.——Dr. John O. Polak, professor of gynecology and obstetrics, Long Island College Hospital, lectured at the Mayo Foundation, Rochester, Minn., July 5, on "How the Pathology Explains the Symptoms and Signs of Ectopic Pregnancy."——Dr. James Herbert Lawson was elected vice commander and Dr. Harmon A. Vedder, treasurer, of the New York County organization of the American Legion.

Kingsbury Predicts as Many Health Centers as Schools.—The secretary of the Milbank Memorial Fund, Mr. John A. Kingsbury, notes in the annual report of the fund that the country will be dotted with health centers as now with schools if the efforts of the U. S. Public Health Service, several American foundations, and other national, state and local philanthropic organizations are successful. It is said that many billions of dollars are backing efforts to bring modern knowledge of individual and community health to the residents of communities throughout the United States. The Milbank Memorial Fund is conducting three health demonstrations in New York, one in Cattaraugus County, one in the city of Syracuse, and one in a congested district of about 2 square miles in New York City. At least half of the residents of Cattaraugus County have had a physical examination since the demonstration started in 1923 through one channel or another; 8 per cent of the population have been examined for tuberculosis, and 2,000 of these persons have been reexamined. During 1925 and 1926, the fund appropriated $325,000 each year for the three New York health demonstrations, which was equivalent to more than 60 per cent of its total appropriations for the year; the other 40 per cent of the appropriations also went for the most part to undertakings directed in one way or another toward the promotion of health and toward the further postponement of premature death. The Milbank demonstrations are now in their fifth year.

NORTH CAROLINA

Personal.—Dr. Franklin Webb Griffith, Asheville, has been appointed assistant divisional surgeon for the Southern Railway system.——Dr. Vonnie M. Hicks and William B. Dewar, Raleigh, have been commissioned examiners in North Carolina for the aeronautics branch of the U. S. Department of Commerce.——Dr. Geralde Varela, Mexico City, Mexico, a representative of the Mexico Department of Health, has completed his laboratory studies with the North Carolina State Health Department and returned to his home. Dr. Varela was especially interested in the production of tetanus antitoxin, and came to Raleigh after completing a course of postgraduate study at Johns Hopkins Hospital School of Public Health on the recommendation of the International Health Board of the Rockefeller Foundation. L. P. Ricks, of the state laboratory of Oklahoma, also has completed a month of special duty in the North Carolina Laboratory and returned to his home.——Dr. Charles F. Strosnider has been elected president of the chamber of commerce of Goldsboro.

OHIO

Personal.—Dr. Charles W. Snook, Clarksville, has been elected president of the Clinton County Board of Health.——Dr. Frank B. Cross was elected president for the ensuing year of the Alumni Association of the University of Cincinnati College of Medicine, and Dr. Donald J. Lyle, secretary.——Dr. Emmet L. Hooper, superintendent, Institution for Feebleminded, Orient, has been appointed superintendent of the Dayton State Hospital, Dayton, to succeed Dr. Harry H. McClellan, resigned.——Dr. Edgar R. Hiatt, Shawnee, has been appointed joint city and county health officer, effective, September 1.

Society News.—Dr. Carey Culbertson, associate clinical professor of obstetrics and gynecology, Rush Medical College, Chicago, gave the third annual David Todd Gilliam Memorial Lecture before the Columbus Academy of Medicine; the subject was "The Gynecologist as a Teacher."——Dr. Earl H. Morris, Dayton, addressed the Darke County Medical Society, Greenville, recently, on the "Estimate of Cardiac Capacity by the General Practitioner," and Dr. John B. Ballinger, Versailles, on "Cause, Prevention and Treatment of Apoplexy."——Dr. H. Jerry Lavender, Cincinnati, addressed the Academy of Medicine of Lima and Allen County, recently, on "Syphilitic Manifestations of the Skin and Mucous Membranes."

Expedition to Mexico to Study Typhoid.—From the University of Cincinnati College of Medicine, Cincinnati, an expedition has gone to Mexico to study the use, under clinical conditions, of an active vaccine treatment for typhoid, which Dr. William B. Wherry, professor of bacteriology and preventive medicine at the university, has given a preliminary trial on several cases of typhoid in Cincinnati. In addition to Dr. Wherry, there is in the party his wife, who is also a physician; Thomas J. Le Blanc, Dr.P.H., associate professor of preventive medicine; Dr. Lee Foshay, assistant professor of internal medicine, and Robert Thomas, a junior medical student. The party sailed from New York, June 30, and will be in Mexico in about three months. Arrangements have been made assuring the cooperation of the Mexican health officials. A fund contributed by Mr. and Mrs. Charles P. Taft, Mrs. William Cooper Procter, Mr. and Mrs. William T. Semple, E. W. Edwards, Mrs. Joseph S. Neave and Mrs. Mary Hannah made this work possible.

Chiropractors Petition for Separate Board of Examiners.—A supplementary petition, said to contain 83,000 signatures, was filed with the secretary of state, Columbus, June 6, by a group of chiropractors who, the state medical journal says, are seeking to secure the enactment by a vote of the people of a proposal to create a separate board of chiropractic examiners. The original petition was filed last December, and was defeated by the house of representatives by a vote of 75 to 31. The state constitution provides that a proposal may be initiated on a petition of 3 per cent of the number of electors voting at the last general election, and if rejected by the general assembly, may be referred to the voters by the filing of a supplementary petition containing an additional 3 per cent of the total number of voters. Persons signing the original petition cannot sign the supplementary petition. The secretary of state will now return the petitions to the respective counties in which signatures were secured for a check of the names by the election board; if found lawful, the proposal will then be submitted to the voters at the November election, when a majority of the votes on the question only—not a majority of the total vote cast—will be required to enact the proposition into law.

PENNSYLVANIA

Gift for Eye Hospital.—Washington Hospital, Washington, was bequeathed $200,000 in the will of the late Miss Margaretta Parkinson for the erection, maintenance and equipment of an annex for the treatment of diseases of the eye. The donor had been blind for many years. The annex to the hospital will be designated in memory of her father and mother, "The Office of Dr. Joseph Parkinson."

Conference on Industrial Nursing.—About 200 medical directors, industrial nurses, employers and state officials attended the conference on industrial nursing held at Harrisburg, June 14, under the auspices of the state department of labor and industry. The conference was called to recognize employers who have developed industrial nursing, and that the duties of the nurses, employers and the state departments might be better understood. Among the speakers were Dr. Loyal A. Shoudy, chief surgeon, Bethlehem Steel Company; Dr. Lewis R. Thompson, chief, division of industrial hygiene, U. S. Public Health Service; Dr. Wade Wright, assistant medical director, Metropolitan Life Insurance Company, New York, and Dr. Theodore B. Appel, state commissioner of health. The department of labor and industry will publish the needs of the conference in a special bulletin.

Hospital News.—Dr. Raymond D. Tice has been appointed to the surgical staff of the Allentown Hospital.——The trustees of the Altoona and Mercy hospitals, Altoona, arranged to conduct a joint campaign for $250,000 to meet the needs for the next two years.——The citizens of Kane are conducting a campaign for a new community-owned hospital; seven citizens pledged $95,000.——The Lemos B. Warne Hospital

opened a new wing, June 14. Dr. Hobart A. Hare, Philadelphia, was the principal speaker; there was a largely attended reception to the Schuylkill County Medical Society on this occasion. The Warne Hospital has been offered to the city of Pottsville together with an endowment of $500,000. It is doubtful whether the city can legally accept the gift, as it cannot levy a tax to support a hospital or acquire a hospital unless it is self-supporting.

Governor Appoints Healing Art Commission.—In accordance with a joint resolution of the legislature of Pennsylvania to create a commission to study the laws relating to the healing art and defining its powers and duties, the governor has appointed the commission. There are twelve members; four are laymen, and one each representing the so-called allopathic, homeopathic, eclectic, chiropractic, osteopathic and naturopathic schools. William C. Freeman, Cornwall, and James J. Heffernan, Philadelphia, are ex officio members of the commission, and the former has been elected chairman. The secretary-treasurer is Dr. Francis D. Patterson. The doctors of medicine who are members of the commission are Ross V. Patterson, Philadelphia; Robert S. Marshall, Pittsburgh, and Edward F. Shaulis, Indiana, Pa. The commission is engaged now in studying the medical practice acts in the various states of this country and of foreign countries, and in the fall will hold public hearings. The object is to follow this study with the framing of a bill or bills to be presented to the general assembly of 1929 not later than February 1, which will provide for the proper regulation, control and administration of the various medical schools and of persons engaging or intending to engage in the practice of healing arts.

Philadelphia

Personal.—Dr. Valentine R. Manning was guest of honor at a testimonial dinner in the Elks Club, June 15.——Dr. John Howard Frick was elected president of the Medical Alumni Association of Trenton University at the annual banquet, June 15.——George D. Rosengarten, Ph.D., president, American Chemical Society, received the honorary degree of doctor of science at the recent commencement of the University of Pennsylvania.

Appointments at Graduate School.—The following appointments on the faculty of the Graduate School of Medicine of the University of Pennsylvania have been announced:

Dr. Bernard Mann, assistant professor of gynecology.
Dr. William T. Johnson, associate professor of therapeutics.
Walter G. Karr, Ph.D., associate professor of biochemistry.
Dr. Thomas M. McMillan, associate professor of cardiology.
Dr. William D. Stroud, associate professor of cardiology.
Dr. Nathaniel W. Winkelman, associate professor of neuropathology.
Dr. Basil R. Beltram, assistant professor of surgery.
Dr. William N. Bradley, assistant professor of pediatrics.
Dr. Henry N. Diamond, assistant professor of otology.
Dr. Jacob K. Jaffe, assistant professor of gynecology.
Dr. Isidor J. Ravdin, assistant professor of surgical research.
Dr. John F. Sinclair, assistant professor of pediatrics.
Dr. Harry B. Wilmer, Jr., assistant professor of clinical allergy.

TENNESSEE

Personal.—Dr. Horace M. Roberson, Pikeville, has been appointed health officer for Bradley County.——Dr. Osgar G. Nelson has been appointed pediatrician on the staff of the child health demonstration at Murfreesboro to succeed Dr. Joseph I. Waring, Jr., who has been with the demonstration about three years and will now go to Nashville.

Typhoid in Nashville.—The health officer of Nashville, Dr. John Overton, is conducting a vigorous campaign to increase the number of persons immunized against typhoid in that city, and up to July 7 about 4,500 persons had been inoculated by the city health department alone. Typhoid appeared to be more prevalent in that community during the this year, fifty-one cases having been reported up to the present time. Twenty-nine new cases were reported in Davidson County between June 1 and July 7.

VIRGINIA

Society News.—Physicians from the counties of Essex, Gloucester, King and Queen, King William, Mathews, Middlesex and York organized the Mid-Tidewater County Medican Society at Saluda, June 27, the *Virginia Medical Monthly* says, to discuss problems that confront the general practitioner in that section; Dr. James W. Smith, Hayes Store, was elected president. The next meeting will be at Gloucester C. H., July 29.

University News.—The Medical College of Virginia, Richmond, will receive from the Martha Allen Wise estate as a residuary legatee about $130,000 for the care and treatment of patients at the St. Philip Hospital, which is owned and operated by the college for the colored people and for teaching purposes.——The president of the Medical College of Virginia announces the following new appointments to the faculty: Dr. William B. Porter, professor of medicine; Sidney S. Negus, Ph.D., professor of chemistry; J. C. Forbes, Ph.D., assistant professor of chemistry; Lewis C. Pusch, associate in pathology, and Jacob G. Jantz, associate in anatomy.

WASHINGTON

Basic Science Committee Appointed.—Governor Hartley appointed the following persons as members of the basic science examining committee, June 27: Dr. John L. Worcester, University of Washington; Dr. David C. Hall, University of Washington; Prof. Wilbur Bohm, State College of Washington; Prof. John Fred Bohler, B.S., State College of Washington, and Prof. Clare C. Todd, Ph.D., State College of Washington.

WISCONSIN

License Revoked.—The state board of medical examiners reports that the license of Dr. Charles W. Blanchard, Janesville, was revoked, April 7, on a charge of manslaughter as a result of an illegal operation. Dr. Blanchard is reported to have confessed to illegally operating on a 19 year old girl, who died, and to have been sentenced to the state penitentiary. He is also reported to have been charged with a similar offense in Rockford, Ill., about three years ago.

Personal.—Edward Kremers, Ph.M., has severed his connection with the University of Wisconsin to organize and direct research in colloid chemistry for E. I. de Pont de Nemours and Company, Wilmington, Del.——Dr. Edwin B. Gute has been appointed health officer of Whitefish Bay.——Dr. Henry C. Werner was elected president of the Fon du Lac Community Chest, June 8.——Dr. William T. Lindsay has been elected president of the staff of the Madison General Hospital.

Society News.—Dr. Emile G. Nadeau has been elected president of the Green Bay Academy of Medicine for the ensuing year; Dr. William Allen Pusey, Chicago, formerly President of the American Medical Association, addressed the academy, June 24, on recent developments in the treatment of syphilis.——Among others, Dr. William H. Hengstler, St. Paul, addressed the Barron-Polk-Washburn-Sawyer-Burnett County Medical Society at Rice Lake, June 7, on "The Effect of High Blood Pressure and Arteriosclerosis on the Nervous System," and Dr. Louis E. Daugherty, St. Paul, on "Fractures of the Lower Radius."——The members of the Dane County Medical Society held their annual field day and picnic with their families on the state hospital grounds at Mendota, June 22.——Dr. Charles A. Parker, associate clinical professor of orthopedic surgery, Rush Medical College, Chicago, and Dr. Lemuel D. Smith of Marquette University School of Medicine, Milwaukee, addressed the Kenosha County Medical Society, June 17, and held a clinic at the courthouse.——Drs. Raymond C. Blankenship and John E. Gonce, Jr., Madison, held a clinic on gastro-intestinal disorders and infant feeding at St. Mary's Hospital, Wausau, under the auspices of the Marathon County Medical Society.——Dr. Mark T. Goldstine, Chicago, addressed the Rock County Medical Society, recently, at Janesville, on "Abnormalities of Endocrine Function with Special Reference to the Ovary," and Dr. Edward L. Miloslavich, Milwaukee, on "Importance of Postmortem Examinations to the General Practitioner."

GENERAL

Inter-State Post Graduate Assembly.—The program of the Inter-State Post Graduate Assembly of North America, which will be held at Kansas City, Mo., October 17-20, notes that clinics will be held at the local hospitals, October 14-15, preceding the assembly. As usual, a large number of prominent physicians and scientists will be on the program. There will be symposiums, diagnostic clinics in medicine, surgery and the specialties, and exhibits.

American Electrotherapeutic Association.—This association will hold its thirty-seventh annual meeting, September 12-16, at the Hotel Pennsylvania, New York; the program will cover the entire field of physical therapy; two days will be devoted to clinical sessions at the physical therapy departments of New York hospitals. The technical exhibit will demonstrate all types of apparatus and accessories. All legally licensed physicians are invited; programs and surgery information can be obtained from the secretary, Dr. Richard Kovacs, 223 East Sixty-Eighth Street, New York.

Society News.—At the sixth annual convention of the Pacific Northwest Association, Boise, Idaho, June 29,

Dr. Emerson F. Root, Salt Lake City, assumed the duties of president; Dr. William B. Holden, Portland, Ore., was made president-elect; Drs. John W. Gue, Caldwell, Idaho, and Robert E. McKechnie, Vancouver, B. C., vice presidents, and Dr. Frederick Epplen, Spokane, Wash., secretary-treasurer. ——At the meeting of the Western Branch of the American Urological Association, Seattle, July 6, Dr. Anders Peterson, Los Angeles, was elected president; Dr. Wirt B. Dakin, Los Angeles, vice president; Dr. William E. Stevens, San Francisco, secretary, and Dr. Alexander H. Peacock, Seattle, treasurer.

National Board of Medical Examiners.—At the annual meeting of the National Board of Medical Examiners, Washington, D. C., May 15, Dr. Walter L. Bierring, Des Moines, was elected president for the ensuing year, and Dr. John S. Rodman, Philadelphia, secretary. Directors elected are Surg. Gen. Merritte W. Ireland, Hugh S. Cumming, Edward R. Stitt and John Whitridge Williams. The board considered at this meeting the subject of conducting an examination in the specialties, but decided that the situation should be studied further by consultations with representatives of the National Specialty Organizations. The board voted further, after considering a communication from the Committee on Education of the Section on Diseases of Children of the American Medical Association, that questions on pediatrics would be included in the future in written examinations in medicine of part II, and that an examination in pediatrics would be included in the practical and clinical examination of part III. There will be examinations, September 14-16, in parts I and II in all class A medical schools in the country where there are sufficient candidates. Applications for this examination should be made not later than August 10.

Citizens' Committee Presents Home to Yellow Fever Volunteer.—Twenty-seven years ago, Private John R. Kissinger, of the Hospital Corps, U. S. Army, volunteered to be bitten by mosquitoes which had fed on fatal cases of yellow fever at Camp Lazear, Cuba, while an army commission was investigating the method of transmission of yellow fever. Mr. Kissinger has been virtually incapacitated for sustained work for the last twenty years, and a citizens' committee was recently formed to sponsor the collection of a fund to secure a home at Huntington, Ind., for him and his family. They moved into the new home, June 29, and the manifestation of appreciation of Mr. Kissinger's services has done much to strengthen him. The citizens' committee was formed on the initiative of Mr. James E. Peabody, biology department, Morris High School, New York, and the members were Harry Emerson Fosdick, Union Theological Seminary; John H. Finley, New York *Times;* Dr. William H. Welch, Johns Hopkins University School of Medicine, Baltimore; Henry Bruere, Bowery Savings Bank, New York; Malcolm H. Ormsbee, New York, and Benjamin C. Gruenberg, of the American Association for Medical Progress. The committee received help from the local chapter of the Red Cross at Huntington, and from writers, journalists, publicists and others.

Major Walter Reed, in his report of those epochal experiments read before the Pan American Medical Congress, Havana, February 4-7, 1901, said:

> Private John R. Kissinger, Hospital Corps, United States Army, aged 23, a nonimmune, occupant of tent number 2, with his full consent, was bitten at 10: 30 a. m., Nov. 20, 1900, by a mosquito (*C. fasciatus*) that had bitten a severe case of yellow fever on the fifth day, eleven days previously; another severe case, on the third day, six days before; and a third severe one on the third day, three days before. As Kissinger had not absented himself from Columbia Barracks for a period of more than thirty days, it was considered safe to inoculate him without waiting for his period of incubation to pass.
>
> Nov. 23, 1900, Kissinger was again bitten by the same mosquito. The result of both inoculations was negative. The mosquito, therefore, was incapable of conveying any infection on the eleventh or fourteenth day after it had bitten a severe case of yellow fever on the third day of the disease. This insect had been kept at ordinary room temperature and died Nov. 26, 1900.
>
> Dec. 5, 1900, at 2 p. m., twelve days after the last inoculation, Kissinger was again bitten by five mosquitoes (*C. fasciatus*), two of which had bitten fatal cases of yellow fever; one the second day, fifteen days before; one a severe case on the second day, nineteen days previously, and two a mild case on the third day, twenty-one days before.
>
> The record of temperature and pulse, taken every three hours following this inoculation, showed that the subject remained in his usual state of health during the following two days, except that on December 8, on the third day, Kissinger had slight vertigo on rising, which soon passed away. At 4: 30 p. m.—commencement of fourth day—he complained of frontal headache; otherwise he felt well and partook of supper with appetite; at 9 p. m., temperature was 98.4 F., pulse 90; at 11: 30 p. m., he awoke with a chill, his temperature was 100 F., pulse 90; he complained of severe fontal headache and backache; his eyes were injected and his face suffused. December 9 at 3 a. m., his temperature was 102 F., pulse 102; he had violent headache and backache, with nausea and vomiting. He was then removed to yellow fever wards. His subsequent history was that of a case of yellow fever at moderate severity. Albumin appeared in the urine on the fourth day, increased to one fifth by volume on the sixth day, and disappeared on December 22. Granular casts were present in considerable numbers from the fourth to the eighth day. The conjunctivae were jaundiced on the third day. The diagnosis of yellow fever in this case was made by Drs. Juan Guitéras, Carlos Finlay, W. C. Gorgas and A. Diaz Albertini, the board of yellow fever experts of the city of Habana, who saw the patient on several occasions during his illness. The period of incubation in this case was three days, nine and one-half hours.

Dr. Howard Kelly said in his book entitled "Walter Reed and Yellow Fever":

> The subject of the first experiment was a young private from Ohio, named John R. Kissinger, who volunteered for the service; to use his own words, "solely in the interest of humanity and the cause of science." When it became known among the troops that subjects were needed for experimental purposes, Kissinger, in company with another young private named John J. Moran, also from Ohio, volunteered their services. Dr. Reed talked the matter over with them, explaining fully the danger and suffering involved in the experiment should it be successful, and then, seeing they were determined, he stated that a definite money compensation would be made them. Both young men declined to accept it, making it, indeed, their sole stipulation that they should receive no pecuniary reward, whereupon Major Reed touched his cap, saying respectfully, "Gentlemen, I salute you." Reed's own words in his published account of the experiment on Kissinger are: "In my opinion, this exhibition of moral courage has never been surpassed in the annals of the Army of the United States."

The government formerly provided a pension of $12 a month for Private Kissinger and later increased it to $100. A bill was introduced in the last congress which would have replaced the present annuities of Mr. Kissinger and other survivors of the yellow fever experiments with a monthly allowance of $250. Congressmen from various parts of the country have indicated they will support a similar measure if introduced during the next session. Private Kissinger was a native of Ohio.

FOREIGN

Far Eastern Association of Tropical Medicine.—The Seventh Congress of the Far Eastern Association of Tropical Medicine will be held at Calcutta, Dec. 5-22, at the invitation of the government of India, and under the presidency of the director general of the Indian Medical Service, Major General T. H. Simons. This association meets bi-annually, at which time the advances in medical and sanitary science and problems connected with tropical medicine, surgery, dentistry and veterinary science are discussed. The viceroy has consented to be the patron of the congress, in accordance with the custom of the heads of the governments in the last three congresses, who have thus honored the association. Government funds have been subscribed to meet the expenses of the meeting, and official delegates from other countries have been regarded as guests of the governments concerned. The sixth congress was held at Tokyo, the fifth at Singapore, the fourth at Java and the first at Manila in 1910. In addition to official delegates representing the respective governments, membership is open to medical, dental and veterinary practitioners, and scientists working in spheres allied to medicine, and they may contribute scientific papers. Those who wish to become members should forward their subscription (£2 for full members and 5 rupees for associate members) to the organizing secretary, Lieut. Col. J. Cunningham, Pasteur Institute of India, Kausli, Punjab, British India. The scientific papers presented will be grouped in sections, the number depending on the number and scope of papers submitted. The official languages of the congress will be English, French and German, and papers will be accepted if written in any of these languages. The subjects of papers to be presented should be forwarded to the secretary not later than July 31 with a typewritten abstract not exceeding 1,000 words. There will be scientific exhibits illustrating tropical disease. These congresses have grown in importance until they have become one of the most representative and authoritative meetings which pertain to diseases of warm climates.

CORRECTION

"Further Experimental Studies in Cholecystography: Pathologic Observations."—In the article with this title, by Drs. Julius Friedenwald, Maurice Feldman and Francis X. Kearney (THE JOURNAL, July 16, p. 195), the photomicrographs appear in the wrong order. Figure 3 should appear first, figure 4 second, figure 1 third, and figure 2 fourth, the explanatory legends remaining in the order in which they originally appeared.

Government Services

Master of Sword at West Point Dies

Many physicians in the United States and other countries knew Lieut.-Col. Herman J. Koehler, master of the sword at the U. S. Army Military Academy, West Point, for thirty-nine years, who died in New York, July 1, following an operation, aged 68. Lieut.-Col. Koehler, as director of physical training at West Point, was largely responsible for the excellent physical training of graduates of that school; his influence in this regard has been evident in every organization of the army. During the World War, Lieut.-Col. Koehler was director of physical training for the entire army; he personally supervised the training of many thousands of officers in training camps and in a few divisions and regiments. Born in Milwaukee, he went to West Point in 1885 as the ninth man to hold the position of master of the sword and the first to combine with it the duties of director of physical education. He organized the system of training now in use at West Point, and although retired four years ago on account of the age limit, during the last year he was actively engaged in athletics.

Army Personals

The resignation of Capt. Otis W. Little has been accepted.——Capts. Benjamin W. Lewis and Joseph E. Campbell have been ordered to Fort Banks and Fort Sam Houston, respectively.——Major Emil H. Burgherr has been relieved from duty in the Panama Canal Zone and assigned to duty at Fort Williams, Maine; on his arrival in the United States he will report to the commanding officer, Walter Reed General Hospital, for observation and treatment. Major William W. Southard has been relieved from duty at the Station Hospital, Fort Sam Houston, Texas, and detailed for duty with the Three Hundred and Fifteenth Medical Regiment, San Antonio, Texas; he is placed on the detached officers' list. Lieut. William F. De Witt is relieved from duty at William Beaumont General Hospital, El Paso, Texas, and will sail about September 8 for the Canal Zone for duty.——The following changes will soon be made among the officers on duty in the Surgeon General's Office, Washington, D. C.: Major Glenn I. Jones, in charge of the reserve section of the personnel division, will be relieved by Major James E. Baylis, who has been at the command and general staff school, Fort Leavenworth, Kansas; Major Edgar C. Jones, who has been on duty at the New York general intermediate depot, has been assigned to the finance and supply division, replacing Major Thomas J. Flynn, who will take the next course at the Army War College; Capt. Ebner H. Inmon, who has been on duty as assistant to Major Jones, goes to the Army Medical School, August 23. He will be relieved by Major Charles Le Baron, Jr., who has been on duty in the Surgeon General's Office; Capt. Thomas M. England, medical administrative corps, who has been on duty at Fort Mason, Calif., has been assigned to the procurement section of the finance and supply division.——Capt. Harry Wall, who has been relieved from duty in the Panama Canal Department, sailed about June 13 for New York, where he will be assigned to the U. S. Army General Dispensary.——Col. Clement C. Whitcomb has been granted a month's leave of absence, effective, July 22, with permission to leave the continental limits of the United States.——Major Oral B. Bolibaugh is relieved from duty in the Walter Reed General Hospital, Washington, D. C., effective, August 1, and assigned to duty at the station hospital, Fort Sam Houston, Texas, on completion of temporary duty at Rochester, Minn.——Major Walter P. Davenport was relieved from duty at the General Dispensary, New York, effective, October 1, and detailed as instructor, New York National Guard, with station at New York.

Examination for Medical Administrative Corps

The war department will conduct an examination of applicants, October 17-22, for appointment as second lieutenants in the medical administrative corps of the army. Applicants must have had at least two years of service as enlisted men in the medical corps. Applications should be addressed to the adjutant general of the army, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 2, 1927.

Report of the Spahlinger Treatment

A medical committee on the Spahlinger treatment, appointed by the Welsh National Memorial Association, has now presented the following report: While it is evident that Spahlinger has created a modern laboratory and has shown much ability in devising apparatus for special branches of bacteriology, the secrecy maintained as to fundamental details of technic renders it almost impossible to judge of the value of his work. He claims to have made achievements far in advance of modern knowledge, but has produced no adequate evidence in substantiation. Whether from technical or financial reasons, all attempts to obtain supplies of the Spahlinger preparations for systematic tests by competent authorities have failed. The published records and statistics of the cases treated by the Spahlinger remedies are not nearly complete or precise enough to allow of scientific evaluation of the results. Based on such evidence and records as are available, these results are inconclusive. In those cases in which the results are good, these can easily be paralleled by other methods. The report made by certain members of the medical staff of the association, after its visit to Geneva, on cases examined and investigated by them, showed that the results, on the whole, were disappointing, especially in view of the claims made. The remedies obviously do not offer a "certain" cure for tuberculosis, and conclusive evidence has not been forthcoming that they have materially altered the course of the disease. The committee cannot recommend the application of public or other funds toward the Spahlinger Institute. It deprecates the publicity campaign on behalf of the Spahlinger movement as unjustified by the evidence so far adduced and as raising false hopes in sufferers from tuberculosis.

Solution of the Difficulty Due to the Establishment of a Separate Medical Register by the Irish Free State

In previous letters, the alarm produced in the Irish medical profession by the project of the Free State government to establish a separate medical register was described. Here, as in some other directions, Irish nationalism was found to have undesired consequences. It is calculated that only about a third of the physicians who qualify from the Irish medical schools remain in the country. The remainder emigrate, mostly to England. In the past there was a common medical register for Great Britain and Ireland, and therefore no obstacle to practicing in England. But the autonomy desired by the Irish government would have deprived the general medical council, which sits in London, of its powers in Ireland, particularly those over medical education and examinations. Registration in England with right to practice there was imperiled, and the Irish medical schools were threatened with such a loss of students, who would go to English schools in England or northern Ireland (which still maintains the common register), that it was declared that ruin was staring them in the face. The Free State government had reluctantly to give way.

A solution has now been found which satisfies the aspirations of all but the most fanatical nationalists and at the same time safeguards the rights of Irish physicians to practice in Great Britain. The medical acts hitherto in force in Great Britain and Ireland will continue to apply to the Free State, as concerns the functions, constitutions, powers, authorities and jurisdiction of the general medical council. The direct representative for Ireland will continue to be

elected by the physicians resident in any part of Ireland. Physicians registered in the medical register shall be entitled to be registered and to practice in the Free State. A Free State medical council has been established to maintain a local medical register, distinct from the general register, and to exercise in regard to it a jurisdiction distinct from that of the general council. But the jurisdiction of the general council in southern Ireland will not be displaced or diminished for any purpose of admission to or removal from the general register, or of maintaining the standard of professional education and examination in reference to registrable qualifications granted in Ireland.

The Ingratitude of the Victims of Automobile Accidents

A country physician has written to the *Daily Express* as follows: "Often while I drive to or from a case I happen to come to the scene of a road accident in which frequently some one is more or less injured. Naturally, being a physician, usually known to some one in the attending group, frequently a policeman, I am asked to give assistance. Over and over again I have treated and bandaged a victim, carried him off in my car, or had him conveyed to the nearest hospital. I have attended at least eight such cases in the past three months. I make my living from my work and am not a professional philanthropist. Therefore my services should be paid for. Yet not one of the eight whom I have attended has responded to my request for the payment of a fee for services rendered; nor, to my knowledge, has any hospital to which I have sent them received a penny. Yet I am sure the majority of these persons have received compensation from insurance companies for injuries received. A month ago I attended a man by the roadside and spent an hour with him and sent him off carrying my best bandages. He now writes to me: 'I did not call you. It was a policeman. Get your fee from the police.'" When this letter was placed before the great motoring organization—the Royal Automobile Club—an official stated that they had a few cases of complaint in relation to nonpayment to medical men brought to their notice but he thought that there could not be any general disregard by motorists of their obligations.

Tetanus from Catgut

An inquest on the body of a woman, aged 26, who died of lockjaw after an internal operation in Charing Cross Hospital, was held. Dr. Sinclair, the anesthetist, said that he gave the woman stovaine for the operation, which was successful. The syringe was properly sterilized and the operation lasted about twenty minutes. There were no bad effects, and the patient seemed quite jolly. He could not understand why she should have died from tetanus. He had given stovaine in thousands of cases and had never had a fatality. Dr. Shepherd of the Charing Cross Hospital said that all the usual steps were taken to guard against sepsis. The instruments had not been used before in a tetanus case. This was the first case that afternoon. Catgut was used for sewing up the internal sac, and thread was used externally. The catgut was sterilized by boiling in xylene for half an hour. He promised to warn the three firms who supplied catgut to the hospital of this case. Dr. Baly of Lambeth Hospital, where the woman died, said that he found a bead of pus in the neighborhood of the sac where the operation was performed, and he was of opinion that death was probably due to tetanus following the operation. His only explanation was that it was conveyed by the catgut, which was very difficult to sterilize inside. The coroner said that there was no doubt that the woman died of tetanus, and the presumption became irresistible that the germ entered at the site and time of the operation. In the great London hospitals, such as Charing Cross, operations were carried out with proper treatment, and everything was done to avoid the entry of a germ. And yet a germ got into the wound in this case. He had no doubt it got there by means of the catgut. There might have been some germ inside the recesses of the catgut, which had been subjected to proper sterilization. He recorded a verdict of "death by misadventure."

Statistics of Centenarians

Mr. Chamberlain, minister of health, in a parliamentary answer gave the following tabular information showing the deaths that occurred in the recent years in England and Wales of persons who had attained the age of 100 and over:

Year	Males	Females
1922	18	59
1923	22	74
1924	22	64
1925	23	69
1926	27	61

The figures for 1926 are provisional.

Outbreak of Diarrhea Due to Contamination of Water Supply

An outbreak of diarrhea in the east end of London appears to have been traced after much investigation to contamination of the water supply. The total number of cases was over a hundred; most occurred in women and children. The usual duration of illness was twenty-four hours. The temperature ranged between 100 and 104 F. The diarrhea was constant and severe. Labial herpes frequently ensued. Patients were left collapsed and weak, and three died. Pathologic examination of the fatal cases did not show striking features. The small intestine was normal, the colon possibly a little congested. The bacteria isolated were of the colon type. The feces of the living had various aspects, some resembling mild dysentery. In two cases Morgan's bacillus was found. The blood serum, tested for agglutination with the salmonella and Flexner groups and the Sonne type, was completely negative. Ice cream was blamed, but, on investigation, exonerated. No other food could be proved culpable. Gastric influenza and irritant poisoning of chemical origin were excluded. The incidence was confined to a small triangular area, where scarcely a house escaped. The water supply then came under suspicion. Samples judged by the routine bacterial tests were below the optimal London standard, but not to an extent which under normal conditions would have caused concern. A number of strains which attracted notice were studied but were pronounced blameless. Several samples, when chemically tested, showed a relatively high chlorine figure. Assuming that the contagion, though present at first, had disappeared before the samples were taken, or else that it was present in the sampled water, but eluded discovery, attention was turned to the connections of the water main serving the stricken area. This pipe was found to be linked up by by-passes with the raw water supply of a gas works derived from the river Lea, and the view was expressed by an engineering inspector of the ministry that under certain conditions of pumping and pressure it would have been possible for reflux raw water from the gas works to get through the by-passes into the pure supply.

Pneumonoconiosis Caused by Asbestos Dust

At a conference of the Royal Microscopical Society, held at Liverpool, a case of pneumonoconiosis due to asbestos dust was reported by Dr. W. E. Cooke and Mr. C. F. Hill. It appears to be only the second reported in this country. The particles found in the lungs were large, some measuring as much as 360 microns. They represented the brittle iron-containing part of the asbestos fibers. The dust contained 18 per cent of iron as ferrous oxide, the raw material 2.1 per cent, and the finished article 0.1 per cent. The microscopic appearances of the dust were identical with those of the particles found in the lungs.

PARIS

(From Our Regular Correspondent)

June 22, 1927.

The Removal of Household Garbage in Paris

The question of household garbage, so important for the health of urban centers, is occupying at present the attention of the municipal council of Paris, where the total garbage accumulations of a single day are immense. Since the administration of the prefect Poubelle, some thirty years ago, garbage has been deposited every evening in front of every house, in zinc boxes, which, in memory of the prefect, have been dubbed by the people, somewhat derisively, *"poubelles."* Numerous complaints on account of the public display of garbage, during from eight to ten hours out of the twenty-four, along the edges of the sidewalks have been made, from time to time, to the council on public health, but, until recently, have remained ineffective for the reason that the council did not wish to interfere with the business of the ambulant ragpickers, who were in the habit of rummaging, during the night, through the garbage boxes to discover whatever of commercial value they contained. The only progress realized of late years is the decision reached a few days ago that, with the advent of Jan. 1, 1929, all garbage boxes must be provided with covers. It has taken thirty years of agitation to get this result, which, for that matter, may prove illusory, for there is little reason to hope that the ragpicker, after raising the cover of a garbage box, will take the trouble to close it down. It has been decided further that garbage boxes may be placed in front of houses at 5 a. m., at the earliest. An automobile truck service has been organized, and, from 5 o'clock on, trucks pass rapidly through the streets and the contents of the garbage boxes are quickly emptied into their capacious maws, which are immediately closed to prevent odors escaping. Further improvement is planned. Heretofore trucks have been emptying their contents at special crematories located in the suburbs, at Asnières for the North and at Issy for the South, in which all garbage is immediately burned. The calcined residue is utilized by running it, while in a liquid form, into molds, by which process it is converted into bricks, which the city sells for construction purposes. But the process of brick manufacturing is expensive, and requires a large crew of workmen. At Marseilles experiments have already been made with the process introduced in Florence by the Italian engineer Beccari. Further experiments are now being conducted in Versailles, and the city of Paris is awaiting the results of that trial with a view to introducing the process if the method promises good returns. The operating expenses are low, and the fertilizing products thus secured are more valuable than the brick produced at present. The garbage is first passed over sieves to remove the solid matter, and the finer substance is transferred to receptacles constructed of reinforced concrete with a capacity of about 20 cubic meters, in which it undergoes a fermentation process similar to that which takes place in septic tanks. The tanks are opened after forty days, at which time they contain a pulpy substance resembling that used by gardeners. It has only a faint odor, and contains 1.3 per cent nitrogenous products, as compared with 0.45 per cent, the proportion of nitrogen contained in night-soil. A bacteriologic study of the residue thus obtained has been begun, and a final judgment as to the value of this method of garbage utilization cannot be reached until such study has been completed. The area required for a garbage utilization plant employing the Beccari process is not great. Investigation of the subject indicates that a city of 60,000 inhabitants would require the construction of around 100 tanks. Allowing for the space for trucks, garages, and the accessory equipment, the plant would occupy an area of 1,800 square meters, and could be located in immediate proximity to a city, for the odors emitted are almost negligible. The expense of transportation would thus be reduced to a minimum.

Electric Treatment of Coryza

Professor Bordier of Lyons has announced a treatment for coryza in which he uses a small but ingenious diathermy apparatus. He raises the nasal mucosa to a high temperature. The method is a modification of a procedure introduced by Tsinoukas of Athens.

The Appointment of Physicians to the Hospitals of Paris

The competitive examinations that, in France, are resorted to in selecting hospital interns, hospital physicians and agrégé professors for the faculties of medicine have, since time immemorial, brought forth storms of criticism. It is alleged that instructors favor the appointment of their own pupils, or even of their relatives. The judges for each competitive examination are chosen by lot, but it is easy to predict the names of the winners in the contest. The system does not permit unqualified persons to be selected, but among the rejected candidates there are many persons who are at least equally competent with those who are accepted, and those rejected must prepare themselves for the next competitive examination, until fortune favors them. The continual preparation for examinations dulls the faculties of many able young students, who thus have no time left to devote to original research. As the number of candidates for the positions cited is at present large, many intelligent students who, under former conditions, would have received appointments before they were 30 years of age are now not appointed until they are 40, 45 or even older, and thus no longer have sufficient time, before the age of retirement, in which to develop a career as men of science. From time to time, changes have been made in the organization of these contests. The written tests that now are turned in to the examining board do not bear the names of the candidates but only numbers for the purpose of later identification. The examinations have now been divided into two stages. Candidates who have passed the first stage three times need not take it again and have only to present themselves for the second stage, which consists chiefly of a test of personal merit as revealed by an inspection of the original articles or works previously published by the candidate. However, nothing has been able to modify the practice of the judges who, while they deplore the bad state of affairs, regard themselves as honor bound to favor the appointment of their own pupils, alleging also that it is the best means of attracting to their departments the most industrious students, who, desirous of improving their chances for advancement, place themselves under the egis of an influential instructor.

At the last competitive examination, again, immediately after the drawing of the names of those constituting the board of examiners, the candidates who saw that their chances were not favored by the make-up of the board published in the press the names of the three candidates who would inevitably be appointed, and events justified their "diagnosis" and "prognosis." In the light of these happenings, when the names of the members of the examining board for the next competitive contest were announced, Professor Sicard, who found his name among the number, handed in his public resignation, stating, with considerable show of feeling, that he did not wish to have his honor compromised by the bargaining and the intrigues that the administration of the competitive examination provoked. In a public letter, he demanded the suppression of the definitive character of the competitive test,

and proposed that the selection of candidates be made by the membership of the Société des médecins des hôpitaux from among the candidates who had been twice admitted to the competitive examination after the first test, which constituted a sufficient guaranty as to their technical ability and capacity. He presented the belief that, if selections were made in that manner, while all possible intrigues might not be suppressed, appointments would be made at least on a larger basis, after the manner of filling university positions, and, being based openly on the value of the published works and the researches of the contestants, would at least have the merit of frankness.

ITALY

(From Our Regular Correspondent)

April 30, 1927.

The Rarity of Chlorosis in Italy

At a session of the Società Medico-Chirurgica della Romagna, Dr. Testi of Faenza stated, on the basis of personal research, that chlorosis has almost disappeared from Italy, especially from certain regions. Similar observations have been made in foreign countries. Dr. Testi thinks that the cause for this improvement must be sought in an earlier and more rapid adjustment of the ovarian function, due to the modifications brought about in the psychology of present-day juvenile life.

Cession of the Military Hospital of Milan

The government has ceded to the Università libera Cattolica the buildings and grounds of the Ospedale militare de S. Ambrogio in Milan. On the 31,000 square meters of terrain thus obtained, the Università Cattolica is planning to erect a complete set of buildings, including a church, lecture halls, scientific laboratories, houses for professors and a boarding hall for students. According to a recent decision, this university will comprise faculties of law, letters and philosophy, including graduate schools in various branches of biology and psychology.

A Medical Referendum

The medical review *La Clinica Ostetrica* has referred the following questionnaire to Italian specialists: 1. Should the indications for hysterectomy be extended so that the operation constitutes a complement to cesarean section, or should utero-ovarian destruction be confined to well defined cases? 2. Should sterilization of women be surrounded with special restrictions and based on frank medical indications, or may purely personal or social indications be accepted? 3. Do the children of women with pelvic impairment show evidence of physical or mental weakness? 4. In hysterectomy should one leave in situ or transplant at least one ovary, or should complete ovariectomy be performed?

The Weight of the Human Thyroid

According to the researches of Professor Fazzari, as communicated by him to the Accademia delle scienze mediche in Palermo, in the inhabitants of the province of Palermo the thyroid has an average weight of 20.38 Gm., or, to be more precise, 16.58 Gm. for men and 25.19 Gm. for women. In 1840, the average weight of the thyroid in the inhabitants of Palermo was placed by the anatomist Gorgone at 28 Gm. According to Fazzari, the reduction in weight now observed is to be attributed to the improved hygienic conditions of the city.

The Scarcity of Medical Aids and Assistants at Italian Universities

At a recent session of the chamber of deputies, Guaccero presented a resolution recommending that, in view of the bad situation in the scientific institutes and the university clinics, due to the growing lack of medical aids and assistants, the legal and economic status of that personnel be inquired into, in order that some solution of the problem might be found. In his interpellation, Guaccero called the attention of the minister of public instruction, above all, to the deficiency of assisting personnel in the laboratories of pure science. The economic position of the aids and assistants varies with the type of university in which they serve (state, semistate or independent). According to the reforms introduced by Gentile, the personnel of the independent schools is no longer included among the government employees. The minister of public instruction has accepted the Guaccero resolution, with recommendation that it be adopted.

The Campaign Against Adenoidism

Premier Mussolini recently addressed to the prefects of the realm a circular letter in which he directed attention to the diffusion of adenoidism in Italy and the influence that such pathologic condition may have on the physical and mental development of children, and especially the predisposition that it may induce to tuberculosis. He emphasized also the need of efficient prophylaxis by means of school inspection, the institution of sanitary vigilance committees and the development of interest among patrons of the schools. The prophylactic work should be developed especially in the schools of the city and in the colleges. The school physicians and the instructors should cooperate in discovering children with adenoid symptoms, and their parents or guardians should be urged to procure for them prompt treatment. The municipal government of Rome was the first to launch a special campaign against adenoidism.

BUDAPEST

(From Our Regular Correspondent)

June 14, 1927.

Cooperation of Medical Organizations

During the winter of 1923-1924, several American physicians came to Budapest in search of practical work. By June 6, 1924, it was decided, in compliance with the request of the Hungarian Medical Postgraduate Committee, that the establishing of an American Medical Association in Budapest would be advantageous. June 9, 1924, a meeting was held between the American physicians present in Budapest and several members of the Hungarian Postgraduate Committee, and a committee of American physicians was appointed by the temporary chairman to discuss in detail with the Hungarian Postgraduate Committee the problem of securing work for physicians.

June 22, the committee met with the Hungarian Postgraduate Committee at the office of Professor Grosz and decided that: 1. Courses would be arranged in English if possible, otherwise in German. 2. Whenever possible such hospitals and clinics would be opened to the American physicians for the purpose of practical study as were closed to them up to date. 3. The physicians appearing for such study would be attended to individually during the period of the desired study. 4. The arrangement of fees for the courses should be decided or agreed on by the Hungarian Medical Postgraduate Committee. 5. The American Medical Association in Budapest required the support of the Postgraduate Committee and its influence with the Hungarian government for such privileges as visa fees and exemption of custom fees on packages containing surgical instruments, utensils and necessities. 6. The Secretary of the American Medical Association would be notified as to which of the enumerated clinics can accommodate American physicians. 7. The text and the manner of

issuing the certificates which the physicians studying in Budapest are to receive would be officially designated. 8. The possibilities of the country universities for the American physicians should be evaluated and summarized. 9. The American Medical Association should receive assistance and official support in securing rooms at the Gellért Hotel—one of the most picturesque sites of the city. 10. The privileges extended to American doctors at the Gellért Hotel should also be granted at other hotels, sanatoriums, pensions and private hotels.

The Hungarian Medical Postgraduate Committee appointed a subcommittee to work out these suggestions. The following members were appointed on the subcommittee: president, Baron Dr. Alexander Korányi, professor of clinical medicine; referent, Dr. Géza Illyés, professor of surgical urology; secretary, Dr. Béla Johann, private lecturer; members, Dr. Rudolf Bálint, professor of clinical medicine at the University of Budapest; Dr. Tiberius Verebély, professor of surgery; representatives of the Royal Hungarian "Pázmány Péter" university at Budapest. There are also representatives of the universities of Szeged, Debretzin and Pécs.

The subcommittee reported on the following points, which are in force at present: 1. The special courses held for the American physicians are given partly in English and partly in German. (In most of the clinics there are older assistants speaking the English language.) 2. Nearly all the clinics are pleased to accept American physicians for study. 3. The directors of the clinics agree on the individual treating of studying physicians. 4. The fee for a practical and individual course, lasting three months, is $100 monthly. Courses for groups, lasting from six to eight weeks, with a maximum of five persons, cost $500; with less than five persons, $400. 5. The Central Committee for the postgraduate work of physicians designated a special subcommittee which gives information to American physicians with regard to clinics and hospitals. 6. The American physicians get a certificate in Latin signed by the professor of the respective course, and attested to by the Central Postgraduate Committee. 7. The Central Postgraduate Committee has representatives in the country universities to give courses. The Central Committee is always glad to assist the American physicians, but is not in the position at present to provide lodgings for them.

The subcommittee, after due consideration, recommends attendance for American physicians for postgraduate study at any of the following places: In Budapest, 1. Royal Hungarian "Pázmány Péter" university clinics and institutes. 2. Hospitals of the City of Budapest. 3. Count Albert Apponyi Polyclinic. 4. Jewish Hospital of Budapest. In the country, 1. Royal Hungarian "Francis Joseph" University clinics and institutes at Szeged. 2. Royal Hungarian "Tisza István" university clinics and institutes at Debretzin. 3. Royal Hungarian "Elisabeth" university clinics and institute at Pécs.

The subcommittee appointed Dr. Emil Grosz, professor of ophthalmology, and Dr. Joseph Baló, assistant professor at the university, to act as an information committee for the American Medical Association in Budapest, and to supervise the issuing of postgraduate certificates. At a recent conference of the American Medical Association in Budapest with the information committee, it was definitely resolved that the English speaking physicians shall not be allowed to do postgraduate work unless they are members in good standing of the American Medical Association of Budapest.

All questions arising should be referred through the American Medical Association to Dr. Emil Grosz or to Dr. Joseph Baló, Budapest, University Clinic, Üllöi ut, 26.

Poisoning by Potassium Bichromate

Dr. Michael Verzár describes fully a case of attempted murder by poisoning with potassium bichromate, which occurred in a provincial town. This compound is rarely used for such a purpose, only a few cases having been reported in the literature. The patient, an electrician, aged 46, was given the poison in red wine, this vehicle being chosen to cloak its color, and also in a mixture of lemonade and soda. The man took altogether about 8 Gm. (120 grains). At first he vomited heavily, and had convulsions, pain in the stomach, dizziness, headache, cold sweats and diarrhea. His face later became ghastly pale; the eyes dilated to the maximum; respirations were very slow and labored, about 10 to 12 a minute; the pulse was 60, and was weak and compressible. The urine contained traces of albumin and considerable blood. The patient recovered after a fortnight, but complained of occasional pains in the stomach and of backache; albumin was persistent for some time in the urine. Dr. Verzár reviews the subject of potassium bichromate poisoning and recommends a treatment which consists in giving alkalis and milk to counteract the irritating poison, and an anodyne for the pain. He describes also the methods of finding all soluble chromates.

BERLIN

(From Our Regular Correspondent)

June 18, 1927.

The Need of Pure Milk for Infants

At a recent meeting of the Verein für innere Medizin und Kinderheilkunde, Professor Reyher demanded that cow's milk destined for infants' use shall be pure and rich in vitamins when produced and that it shall also be kept in that condition until it is used. Not only the summer peak of the infant mortality curve but also the winter peak, which is caused by respiratory infections, are closely related to the pure milk question. Although the children die from the bacterial insult, their illness may develop as the result of damaged nutrition, which weakened their resistance and exposed them to infection.

The pediatrician demands for infant feeding the presence of vitamin B (the antiberiberi vitamin) and vitamin C (which prevents scurvy). The fat content is much less important.

The results obtained with the various kinds of milk used in this region did not point to satisfactory conditions. Only in case he takes three precautions is Reyher able to produce good milk in his small experiment station. He feeds the cows well, both qualitatively and quantitatively; in summer putting them out to pasture, and in winter supplying suitable green fodder, turnips, hay and, for the sake of vitamin B, small allowances of clover and soy-bean straw. Lean cows must be well fed for from two to three months before they can give milk containing any considerable amount of vitamins. To insure the best quality of milk, milch cows should not be bred from, for a cow with calf stores up vitamins, which impoverishes the milk. For the destruction of bacteria Reyher recommends, exclusively, boiling for a short period in the homes. He is opposed to pasteurization by heating for a considerable period at a comparatively low temperature on the ground that the process destroys only the vitamins. The decision as to the quality of a milk is made at the place of production. In order to get "first-class fresh raw milk," the dairy must be conducted with hygienic precautions. In the home it should be brought to a quick boil, boiled for a few minutes only, and then brought to a low temperature until it is to be used. Canned condensed milk lacks the necessary vitamins. Powdered milk, which is comparatively easy to

keep free from contaminating organisms, and which is also easy to transport, should be prepared from fresh milk of unobjectionable quality. The desiccation process should be carried out in a conservative manner. Reducing the milk to a fine spray favors oxidation, which may easily destroy the sensitive vitamin C.

Inoculation Against Tuberculosis

At a meeting, March 11, in the bureau of the public health service (Reichsgesundheitsamt), the federal health council advocated thorough testing of the various inoculation procedures against tuberculosis, since in none of the procedures have the effects of inoculation been sufficiently established.

Census of Persons with Infirmities

In supplementation of the census of June 16, 1925, which included population, trades and industries, a census of infirm persons has been taken.

The number of infirm persons in Germany, exclusive of the Saar region, and with the exception of Wurtemberg and Lübeck, has now been published. According to the preliminary report, the number of male blind persons with permanent domicile in the whole *reich* was 20,471; females, 14,232; the records for Prussia showed, respectively, 12,757 and 8,816. The number of male deaf mutes and deafened persons in Germany was 20,835; females, 17,744; in Prussia, 12,739 and 10,768, respectively.

The number of persons with other bodily infirmities, in the German *reich*, was 292,635 males and 112,030 females; in Prussia, 192,958 males and 76,278 females.

The number of persons with mental defects was, for the German *reich*, 98,926 males and 95,443 females; in Prussia, 60,189 males and 56,757 females.

With reference to the total population, the following figures were computed: To each 10,000 of population, there were in Germany 7.1 blind males and 4.6 blind females; in Prussia, there were 6.9 and 4.5, respectively.

The number of deaf mutes and deafened persons in the German *reich* was 7.2 males per 10,000 population, and 5.7 females; in Prussia there were 6.9 and 5.5, respectively. As to the number with other bodily infirmities, there were 101.4 males per 10,000 population, and 36.2 females; in Prussia, there were 104.4 and 38.7, respectively.

The proportion of persons with mental defects, in the German *reich*, was 34.3 males per 10,000 population, and 30.8 females; in Prussia, there were 32.6 and 28.8, respectively.

Of each hundred male and female persons, respectively, with infirmities, in the German *reich*, there were 14.7 males and 28.5 females being cared for in institutions for the infirm. The corresponding figures for Prussia were 14.2 and 26.7, respectively.

Marriages

JULIUS HOWARD TEMES, Toronto, Ont., Canada, to Miss Hannah Hass of Jersey City, N. J., June 22.

GEORGE E. DUDENBOSTEL, Chicago, to Miss Nona Russell of Ashdown, Ark., June 28.

JAMES CRESCENT REDINGTON to Miss Evelyn Hansen, both of Galesburg, Ill., June 27.

WILLIAM LUCAS BUTLER, Stafford, Kan., to Miss Mabel Newhill of Rozel, May 27.

WILLIAM PETER CONNOR to Miss Muriel O'Neil, both of Youngstown, Ohio, July 9.

ARTHUR PERKINS, Oakland, Calif., to Miss Katharine Becker of Ogden, Utah, June 14.

ADRIAN WALTER VOEGELIN to Miss Verna Rhine, both of Philadelphia, June 27.

DAVID P. FERRIS to Miss Annice B. Peterson, both of St. Louis, June 30.

Deaths

Hanau Wolf Loeb ✠ St. Louis; Ensworth Medical College, St. Joseph, Mo., 1887; Medical Department of Columbia College, New York, 1888; dean, professor and director of the department of otolaryngology, St. Louis University School of Medicine; formerly secretary and professor of nose and throat diseases, Marion-Sims-Beaumont College of Medicine, St. Louis; member of the American Academy of Ophthalmology and Otolaryngology, the American Laryngological Association, the American Otological Society, the American Association of Anatomists and past president of the American Laryngological, Rhinological and Otological Society; secretary of the American Board of Otolaryngology; chairman of the Section on Otology and Laryngology, 1907-1908, and member of the House of Delegates in 1909 of the American Medical Association; author of "Operative Surgery of the Ear, Nose and Throat," "Military Surgery of the Ear, Nose and Throat," and editor of the *Annals of Otology, Rhinology and Laryngology;* on the staffs of the St. Louis City Hospital and St. Mary's Group of Hospitals; for many years president of the staff of the Jewish Hospital, where he died, July 6, of heart disease, aged 61.

William Otterbein Krohn ✠ Chicago; Northwestern University Medical School, Chicago, 1905; formerly head of the department of philosophy, psychology and ethics, Adelbert College and Cleveland College for Women, Western Reserve University, Cleveland; assistant professor of psychology and pedagogy, University of Illinois, and professor of psychiatry, Loyola University School of Medicine, Chicago; delegate to the American Medical Association in 1918; psychologist to the Eastern Hospital for Insane, Kankakee, Ill., 1897-1899; specialized in neurology and psychiatry; served during the World War; author of "In Borneo Jungles" and other books, and co-author of "Insanity and Law"; aged 59; died, July 17, at the West Suburban Hospital, Oak Park, Ill., of hypernephroma with metastases in the lungs and brain.

Claudius Redon Prall Fisher ✠ Boundbrook, N. J.; Jefferson Medical College of Philadelphia, 1877; formerly president of the Boundbrook Board of Health; past president of the Medical Society of New Jersey, and the Somerset County Medical Society; on the staff of the Somerset Hospital, Somerville; aged 69; died, June 5, of heart disease.

Wallace Cushing Keith, Brockton, Mass.; Harvard University Medical School, Boston, 1884; member of the Massachusetts Medical Society; formerly member and chairman of the school board; for six years state health inspector; at one time on the staff of the Brockton Hospital; aged 68; died, June 19, of heart disease.

Ernest Fanning Tucker ✠ Portland, Ore.; Harvard University Medical School, Boston, 1884; emeritus professor of gynecology, University of Oregon Medical School, Portland; on the visiting staffs of the Multnomah Hospital and St. Vincent's Hospital, where he died, July 2, as the result of pneumonia, aged 65.

Edward Jerome Peck, Hot Springs, N. C.; Vanderbilt University School of Medicine, Nashville, 1879; University of Nashville Medical Department, 1880; member of the Medical Society of the State of North Carolina; aged 68; died, in June, at the Mission Hospital, Asheville, of heart disease.

Charles Joseph Albl, Cleveland; Western Reserve University School of Medicine, Cleveland, 1908; member of the Ohio State Medical Association; for eight years on the staff of St. Alexis Hospital; aged 46; died, June 2, of septic peritonitis following a streptococcus infection of the throat.

Henry E. Williams, Pine Bluff, Ark.; Memphis Hospital Medical College, 1884; Medical Department of the Tulane University of Louisiana, New Orleans, 1886; member of the Arkansas Medical Society; for twenty years county coroner; aged 72; died, June 23, of carcinoma of the prostate.

Edward Arthur Dawson, Brooklyn; Albany Medical College, 1902; member of the Medical Society of the State of New York; served during the World War; aged 48; died, July 3, at the Long Island College Hospital, following an operation for duodenal ulcer.

Anthony Brewis Russell ✠ East Orange, N. J.; University of Virginia Department of Medicine, Charlottesville, 1896; on the staffs of the Presbyterian Hospital and the Newark Charitable Eye and Ear Infirmary, Newark; aged 55; died, June 30, of angina pectoris.

Julius C. Sommers, Madison, Wis.; Medical Department of the University of Illinois, Chicago, 1901; member of the

State Medical Society of Wisconsin; for twelve years county physician; aged 57; died, May 5, at a local hospital, following a long illness.

Archibald Lybolt, Bogota, N. J.; Medical Department of the University of the City of New York, 1878; member of the Medical Society of the State of New York; aged 84; died, June 15, of hypertrophy of the prostate gland and heart disease.

Frederick Berkeley Gunter, Chelsea, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1893; aged 57; died, June 11, at the Peter Bent Brigham Hospital, Boston, of chronic myocarditis and chronic nephritis.

Walter Edwin Paris, Savannah, Ga.; Medical Department of the Tulane University of Louisiana, New Orleans, 1894; member of the Medical Association of Georgia; aged 55; died, June 10, in Atlanta, of tumor of the brain.

William H. Stauffer ✠ St. Louis; University of Michigan Medical School, Ann Arbor, 1887; member of the American Proctologic Society; on the staff of the Deaconess Hospital; aged 64; died, June 24, of abdominal aneurysm.

Edward Lawrence Willson, Jr., Marysville, Kan.; University Medical College of Kansas City, Mo., 1902; member of the Kansas Medical Society; served during the World War; aged 49; died, June 6, of cerebral hemorrhage.

Martha Elizabeth Mann, Boston; Boston University School of Medicine, 1885; formerly associate professor of diseases of women at her alma mater; aged 79; died, June 20, at her home in Brookline, of valvular heart disease.

Alexander Dowsing Mims, Altheimer, Ark.; Medical Department of the Tulane University of Louisiana, New Orleans, 1908; aged 45; died, June 24, at the Davis Hospital, Pine Bluff, of carcinoma of the left bronchus.

Herbert George Lampson, Duluth, Minn.; University of Michigan Medical School, Ann Arbor, 1895; county health officer; aged 56; died, June 25, of pulmonary embolism following an operation for appendicitis.

Niels Christian Hansen, Portland, Maine; McGill University Faculty of Medicine, Montreal, Que., Canada, 1903; member of the Maine Medical Association; aged 64; died, May 24, of angina pectoris.

Joseph Clarence Caldwell, Butler, Pa.; University of Pittsburgh School of Medicine, 1895; member of the Medical Society of the State of Pennsylvania; aged 59; died, June 8, of gastric hemorrhage.

Edward Beecher Hooker, Hartford, Conn.; Boston University School of Medicine, 1877; aged 72; died, in June, of streptococcus infection, following the removal of a stone from the bladder.

Frank Fisher Moore ✠ Homer City, Pa.; Medico-Chirurgical College of Philadelphia, 1903; on the staff of the Indiana (Pa.) Hospital; aged 46; was shot and killed by a patient, June 25.

Hiram Rodney Burton ✠ Lewes, Del.; University of Pennsylvania School of Medicine, Philadelphia, 1868; on the staff of Dr. Beebe's Hospital; aged 85; died, June 17, of carcinoma of the bladder.

Joseph C. Marcus, Cincinnati; Medical College of Ohio, Cincinnati, 1878; member of the Ohio State Medical Association; aged 69; died, June 26, at the Jewish Hospital, of pneumonia.

Leigh Yerkes Baker, Washington, D. C.; University of Michigan Homeopathic Medical School, Ann Arbor, 1890; aged 59; died, June 23, of ascending lateral sclerosis and paraplegia.

George Holland Fay, Whitewater, Wis., Hering Medical College, Chicago, 1913; Chicago College of Medicine and Surgery, 1914; also a veterinarian; aged 67; died, June 29, of sarcoma.

Moses Rosenberg, Rochester, N. Y.; Detroit College of Medicine and Surgery, 1891; aged 57; died, February 23, at the Long Island College Hospital, Brooklyn, of diabetes mellitus.

John E. Hyer, Curtin, W. Va.; University of Louisville (Ky.) School of Medicine, 1892; member of the State Medical Association of West Virginia; aged 60; died, July 5, of uremia.

Rachel R. Benn Dunkle, Meadville, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1890; for nearly twenty years a medical missionary in China; aged 73; died, May 4.

William Franklin Baker ✠ Carmel, Ind.; Indiana University School of Medicine, Indianapolis, 1911; aged 43; died, June 30, at St. Vincent's Hospital, Indianapolis, of peritonitis.

Guy Allen Brooks, Marvell, Ark.; Emory University School of Medicine, Atlanta, 1915; served during the World War; aged 33; died, June 18, at Little Rock, of myocarditis.

Edward Thomas Calhoun, New Haven, Conn.; Yale University School of Medicine, New Haven, 1927; aged 26; died, April 10, of embryoma of the testis with metastases.

William Allen Post, Grantville, Ga.; University of Georgia Medical Department, Augusta, 1913; member of the Medical Association of Georgia; aged 48; died, April 7.

Edward Douglas Davis, Winchester, Va.; University of Maryland School of Medicine, Baltimore, 1894; aged 58; died suddenly, June 15, of carcinoma of the stomach.

Edward Dunn Freeman, Osgood, Ind.; Medical College of Ohio, Cincinnati, 1877; formerly secretary of the Ripley County Medical Society; aged 73; died, June 20.

Walter Browning Peet, New York; Medical Department of the University of the City of New York, 1897; aged 66; was found dead, June 22, at Hammonton, N. J.

Sampson C. Cunningham, Corsicana, Texas; Meharry Medical College, Nashville, 1917; aged 39; died, June 22, at a hospital in Fort Worth, of acute appendicitis.

Robert Judson Fly ✠ San Diego, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1899; aged 59; died, April 17, at the Sunshine Hospital.

Abner Newton Steele ✠ Anniston, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1890; on the staff of St. Luke's Hospital; aged 66; died, May 28.

Thomas James Dehey, Cleveland; St. Louis University School of Medicine, 1914; served during the World War; aged 59; died, June 4, of angina pectoris.

Edwin R. Lovesee, Monticello, Wis.; Chicago Medical College, 1877; aged 79; died, June 22, as the result of a cerebral hemorrhage suffered some time ago.

John J. Whyte, Golden Valley, N. D.; McGill University Faculty of Medicine, Montreal, 1889; aged 59; was killed, June 8, in an automobile accident.

William Monroe Wroten, Magnolia, Miss.; Louisville (Ky.) Medical College, 1872; Confederate veteran; aged 80; died, June 18, of facial erysipelas.

John L. Daniels, New York; New York Homeopathic Medical College and Hospital, New York, 1882; aged 67; died suddenly, July 3, of heart disease.

William Thomas Collette, Versailles, Ky.; University of the South Medical Department, Sewanee, 1899; aged 50; died, in June, of heart disease.

William S. Simonton, Flemington, W. Va. (licensed, West Virginia, under the Act of 1881); aged 79; died, June 4, following a long illness.

John C. Norwood, Washington, D. C.; Howard University School of Medicine, Washington, 1884; aged 68; died, June 18, of cerebral hemorrhage.

Harry Seymour Pearse, New York; Albany Medical College, 1892; aged 57; died, June 11, at Montclair, N. J., of cerebral hemorrhage.

Charles H. Meyers ✠ Cincinnati; Miami Medical College, Cincinnati, 1896; aged 59; was killed, June 13, when struck by an automobile.

Fairchild A. Bevens, Pottsboro, Texas; Beaumont Hospital Medical College, St. Louis, 1892; also a druggist; aged 59; died in June.

Harry Bestow Huver, Williamsville, N. Y.; University of Buffalo School of Medicine, 1898; also a dentist; aged 53; died, June 4.

Florence West Lyde Altaffer, Cleveland; Cleveland Homeopathic Medical College, 1899; aged 62; died, March 13, of pneumonia.

George Bartholomew Whare, Two Harbors, Minn.; Rush Medical College, Chicago, 1903; aged 50; died, June 14, of pneumonia.

Isaac Lockhart Peebles, Meridian, Miss.; Mississippi Medical College, Meridian, 1911; also a minister; aged 71; died recently.

Demos George Kyraz, New York; National University, Athens, Greece, 1908; aged 42; died, April 6, of erysipelas.

Jackson B. Golden, Atlanta, Ga.; Atlanta Medical College, 1892; aged 68; died, June 15, of heart disease.

The Propaganda for Reform

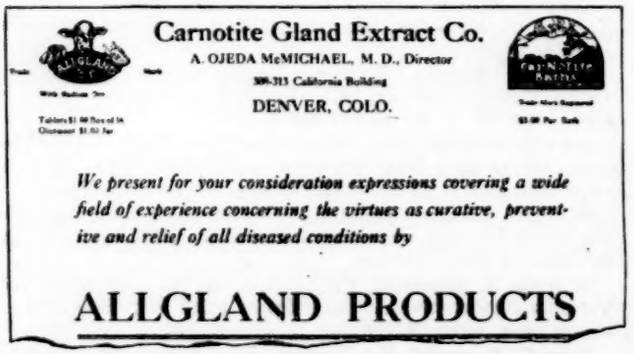
IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Vitona.—The Vitona Mineral Ore Company of Marshall, Texas, shipped to Ohio, in November, 1925, a quantity of "Vitona" that the federal authorities declared was misbranded. When analyzed by the Bureau of Chemistry at Washington, Vitona was found to consist of a crude silicate ore containing iron sulphate, free sulphur and charcoal, with traces of calcium, magnesium and aluminum sulphate. The preparation was falsely and fraudulently labeled as a remedy or cure for rheumatism, indigestion, kidney and bladder trouble, eczema, diabetes, piles, sore eyes, erysipelas, constipation, female complaints, and various other conditions. In October, 1926, judgment was entered finding the product misbranded, and the court ordered that it be destroyed.—[*Notice of Judgment 14712; Issued April, 1927. Chem. Suppl. 225.*]

McMichael's Allgland with Radium.—The Carnotite Gland Extract Company, Denver, Colorado, shipped in August, 1924, a quantity of "Dr. McMichael's Allgland with Radium," which the federal authorities declared was misbranded. When analyzed by the Bureau of Chemistry, the preparation was found


Carnotite Gland Extract Co.
A. OJEDA McMICHAEL, M. D., Director
309-311 California Building
DENVER, COLO.
We present for your consideration expressions covering a wide field of experience concerning the virtues as curative, preventive and relief of all diseased conditions by
ALLGLAND PRODUCTS

to be tablets containing 91 per cent of milk sugar, together with talc, a trace of nitrogenous organic matter and a faint trace of radium. Some of the claims made on or in the trade package were:

"The Great Body Builder Makes You Feel Younger."

"A Gland And Body Food Eliminating, Preventing And Correcting All Diseases Caused By Over Work, Nervous Or Rundown Conditions."

"It prevents diseases or it gives relief in all diseased conditions."

These and similar claims were declared false and fraudulent, and in November, 1926, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 14724; Issued April, 1927. Chem. Suppl. 225.*]

Allfood with Radium.—The Allfood Laboratories, Denver, Colorado, shipped to California in May, 1926, a quantity of "Allfood with Radium," which the federal authorities declared was misbranded. When analyzed by the Bureau of Chemistry, the stuff was found to consist of about 86 per cent milk sugar and 14 per cent of material insoluble in water, comprising mainly talc, mineral matter, and a small amount of animal glandular tissue. Each tablet contained about 0.09 millimicrograms of radium. The claims made for this preparation were grossly false and fraudulent. In January, 1927, W. S. Townsend, Los Angeles, having appeared as a claimant for the property, and the product having been relabeled to comply with the law, the court ordered that it be released to Townsend upon payment of the costs of the procedure.—[*Notice of Judgment 14832; Issued May, 1927. Chem. Suppl. 227.*]

Brooten's Kelp Ore.—The Kelp Ore Remedies Corporation, Portland, Oregon, shipped in March, 1926, from Oregon to Washington a quantity of "Brooten's Kelp Ore" and also of "Brooten's Kelp Ore Liquid," which the federal authorities declared were misbranded. When analyzed by the Bureau of Chemistry, it was found that Brooten's Kelp Ore was a shale-like clay containing iron and aluminum sulphates, and a trace of sulphur, while the Brooten's Kelp Ore Liquid was a water solution of iron and aluminum sulphates, with traces of calcium, magnesium and potassium salts. The curative claims made for these products were false and fraudulent and, in December, 1926, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 14827; Issued May, 1927. Chem. Suppl. 227.*]

Correspondence

PRIORITY IN ISOLATION OF PARATHYROID HORMONE

To the Editor:—The appearance in book form of the Harvey Lectures for 1926 containing an article by Dr. J. B. Collip on the hormone of the parathyroid glands provides me with a reason for putting on record a statement of the facts relating to the question of priority in the separation of this substance.

Dr. Collip refers to the work of previous investigators, lumping them all together as if they had all failed whereas he alone is entitled to the credit for both the originality of the conception and execution of the idea which resulted in obtaining the internal secretion of the parathyroids in a soluble form.

In May, 1924, I presented to the Society of Experimental Medicine and Biology, at the invitation of Prof. William J. Gies, the following abstract of my work in this field:

Parathyroid glands from oxen were extracted with acidified alcohol. Lipins and proteins were removed from the extract. Crystalline material was obtained by concentration which increased definitely the calcium content of the blood when dissolved in Ringer solution and injected into the circulation. Its effects upon the calcium content of the blood have been compared with those of adrenalin, pituitrin and insulin. Whether this crystalline material is the active calcium mobilizing substance in the gland or merely a carrier of it in the preparation, remains to be determined. Its separation is additional evidence in favor of the view that the parathyroid glands secrete a hormone that influences the calcium content of the blood.

This abstract contained the original conception which Collip used for all his work, his first publication appearing in the following year, 1925; that is, the idea that the parathyroid glands produce a calcium mobilizing and calcium regulating substance, for the blood and tissues. If this idea was correct, it occurred to me that it ought to be possible to increase the blood calcium of normal animals with an extract of the parathyroid glands. Also that the demonstration of a calcium mobilizing effect of such an extract would be the proof that the internal secretion of the gland was present, if in addition such an extract could be shown to influence the electrical excitability of the peripheral nerves of normal and parathyroidectomized animals. This idea had never before been voiced in the literature and no work had previously concerned itself with it.

The idea was presented to Prof. William J. Gies of the department of biologic chemistry of Columbia University, who agreed enthusiastically concerning its rationality. The initial work was done in the laboratories of the department of biologic chemistry of Columbia University with the assistance of the valuable critical suggestions of Professor Gies

and I have been at work there on the problem ever since. An active soluble extract was found which did precisely what had been expected. Crystalline material was obtained which presented the same properties as the soluble extract. Work was commenced concerning the effect of the extract on parathyroidectomized animals with tetany, which was reported in the *American Journal of Physiology*, January, 1926, and the *Journal of Laboratory and Clinical Medicine*, February, 1926. Work on both the laboratory and clinical sides, with this crystalline material, has been continuously carried on since 1924. Meanwhile it seems to me that for those who may have read something concerning the matter the facts regarding priority should be properly presented.

LOUIS BERMAN, M.D., New York.

BRACHIAL PLEXUS BLOCK

To the Editor:—I have just received THE JOURNAL, May 7, in which there is an article entitled "Brachial Plexus Block: Its Clinical Application." To some of the statements made I must take friendly issue. In one part of the article in question the statement is made in effect that the practice of seeking for paresthesias in the extremities in doing a brachial plexus block is dangerous and not to be countenanced, and that "the cords of the plexus cannot be touched by the needle with impunity." Kulenkampff is an acknowledged master in this work and is, after Hirschel (whose method of axillary approach to brachial plexus nerve block is not commonly used), a pioneer in the field and the protagonist of the supraclavicular route of approach. Heinrich Braun, too, needs no introduction as a surgeon and student of local anesthesia. Now, it has been my privilege to be under the direct tutelage of these men at their hospital in Germany in receiving instructions in local anesthesia. I can well remember how Professor Braun and Professor Kulenkampff impressed me with the absolute necessity of obtaining the very paresthesias in the finger tips against which the writers of the statement referred to decry, before proceeding with the injection. Time and again I have been told by them that the sine qua non was the tingling in the finger tips which was the signal to stop the further penetration of the needle immediately and to inject the solution; a further fact: the patient on whom a brachial plexus block is being done is instructed painstakingly beforehand to report immediately any peculiar tingling in the finger tips. Then and only then do either Professor Braun or Professor Kulenkampff proceed with the injection. In the latest German (edition 7, 1925) book of Braun, Oertliche Betäubing (Local Anesthesia), are several statements bearing on this point. I shall translate from the German somewhat fully: "Patients . . . are to declare the onset of paresthesias and must at the moment these are felt make it known by saying 'now'" (page 422); and again, "If one does not obtain paresthesias immediately, one is to seek it by slight changes of the needle's directions" (page 423). Obviously it is important for paresthesias to be gotten, and so these men taught me. As to solution and dosage: From 10 to 20 cc. of a 2 per cent solution of procaine hydrochloride and epinephrine hydrochloride is used. If perfect anesthesia does not result in ten minutes, 5 cc. more of a 4 per cent solution can be added. Direct queries on my part of Professors Braun and Kulenkampff as to brachial cord injury in this method of local anesthesia have brought forth a reply in the negative; occasionally there have been some mild late and transient paresthesias which were of no consequence. A final word as to posture of patients: Contrary to the practice of the writers of the article under discussion, the sitting position is used by Braun and Kulenkampff in all cases except when some condition of the patient acts as a contraindication.

This letter has been written in the hope that those practicing local anesthesia of this region will find in these few principles of the masters some definite guides to direct them in their efforts.

M. A. PERSKY, M.D.,
84 Orms Street, Providence, R. I.

THE IDEAL ANTACID

To the Editor:—In the communication of Dr. John L. Kantor (THE JOURNAL, June 25, page 2047), he raises the question as to the relative values of other neutral antacids which were not mentioned by Loevenhart and Crandall in their article on the advantage of calcium carbonate in gastric hyperacidity. He refers to the work of Shattuck and himself. According to the work of Shattuck, Rohdenburg and Booher (THE JOURNAL, Jan. 19, 1924, p. 202, table 1), calcium carbonate has approximately two to seven times the power of magnesium phosphate and calcium phosphate for neutralizing acid. The relative neutralizing power of the various antacids, as calculated from their chemical formula, is as follows:

Calcium carbonate, $CaCo_3$	100
Sodium bicarbonate, $NaHCO_3$	59.6
Tricalcium phosphate, $Ca_3(PO_4)_2$	32.3
Trimagnesium phosphate crystals, $Mg_3(PO_4)_2.4H_2O$	29.8

Magnesium hydroxide and carbonate are not included in the table because of their disturbing effect on the bowel.

A. S. LOEVENHART, M.D., Madison, Wis.

"DIHYDROXYACETONE AND DIABETES"

To the Editor:—Apropos of the editorial comment on dihydroxyacetone and diabetes (THE JOURNAL, June 11, p. 1895) may I respectfully draw your attention to the following references which the writer of the editorial apparently overlooked:

Canad. M. A. J. **16**: 367, 1926.
J. Clin. Investigation **2**: 521, 1926.
J. Clin. Investigation **2**: 533, 1926.
Biochem. J. **20**: 486, 1926.
Proc. Soc. Exper. Biol. & Med. **24**: 238, 1926.

These represent observations made independently in three different laboratories and on the whole corroborate the results in our laboratory. In only one laboratory have the observations not agreed with our own, and these appear to form the subject matter of the editorial.

I. M. RABINOWITCH, Montreal.

RUBBER GLOVE FOR OPERATIONS ON HAND

To the Editor:—Regarding the useful method of securing a sterile field for operations on the hand by use of rubber gloves, described by Dr. D. C. Patterson, Bridgeport, Conn., in THE JOURNAL, June 4, this method was demonstrated to me by Dr. Alan B. Kanavel of Chicago a number of years ago. Dr. Kanavel may be too modest to claim it, but I believe that he is the originator of the method.

FRANK P. CORRIGAN, M.D., Cleveland.

CHANCRE OF THE NASAL SEPTUM

To the Editor:—In THE JOURNAL, May 28, Dr. Zeisler publishes a report of three patients suffering from chancre of the nasal septum, one of the patients being a physician.

I know of two more physicians who acquired syphilis by picking their noses while examining patients. Especially younger colleagues forget themselves while examining patients and scratch their itching nose. Students ought to be cautioned; also the interns and younger doctors who are so eager to work and learn.

JACQUES HOLINGER, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF AMEBIC DYSENTERY

To the Editor:—Will you please write me the latest treatment in detail of amebic dysentery? The patient I have has been under treatment with colonic irrigations, emetine and several of its derivatives, with practically no results, over a period of two years. The symptoms seem much improved at times and the patient gets along very well for three or four weeks, and then has a recurrence of bleeding, mucus, nausea and vomiting, with intense pain throughout the intestinal tract. I should be very glad if you could give me any suggestions and form of treatment.

M.D., Connecticut.

ANSWER.—The history cited is typical of the chronic cases of endamebiasis in which, under the influence of emetine, the endamebas are converted from the *histolytica* stage to the less active *tetragena* stage. Emetine, though of great value in the acute or subacute stages and relapses of the disease, cannot be relied on for the complete eradication of the infection. Recourse must now be had to powdered ipecac given in full dosage and at regular intervals. The reason for the superiority of ipecac in the latent stage lies probably in the fact that it takes time for the alkaloids to be extracted from the powder. There is a greater degree of concentration and local action in the intestine, and less of the undesirable systemic effects.

The powdered ipecac is best administered in 0.3 Gm. enteric coated pills. From ten to fifteen of these pills should be administered at bedtime, not less than three hours after food, and the patient should be urged to go to sleep as promptly as possible afterward. The addition of tannic acid (0.06 Gm.) to each pill is likely to lessen nausea and vomiting. Should the tendency to nausea or emesis be great, it may be necessary to administer tincture of opium (from 0.5 to 1 cc.) half an hour before giving the pills or morphine (from 0.008 to 0.016 Gm.) hypodermically.

The full course of treatment requires the retention of at least 100 pills, equivalent to 30 Gm. of the powdered root. As only those pills become active that disintegrate, the stools should be examined for pills that are passed, and these, of course, subtracted in calculation of the total dose. If too great a proportion of pills is passed in the stool, the coating should be pierced with a sharp needle, which is likely to expedite disintegration. This treatment needs to be accompanied by absolute rest in bed during the entire duration of the treatment, which rarely covers more than two weeks. The diet should be composed of clear liquids the first week to which milk may be added during the second week. The diet is intended to assist in maintaining maximum possible ipecac concentration in the bowel.

Once complete destruction of the organisms has been secured by a course of specific treatment, intestinal irrigation with mild astringent solutions may favor healing. These irrigations should not, however, be used during the ipecac course, because they interfere with the retention of the drug in the large bowel. Bismuth subnitrate in doses of a heaping teaspoonful every three or four hours for a week or two, or until the stools become thoroughly formed, is also useful after-treatment.

MUCOUS COLITIS

To the Editor:—I have a patient who has mucous colitis. A physician has advised her to use stovarsol. Please let me know what the tablets are and what they are used for; also who makes them. Please give me treatment for mucous colitis. I have tried many things.

M.D., Colorado.

ANSWER.—Stovarsol (Acetarsone, N. N. R.) is an organic arsenical which was discarded by Ehrlich as inferior to arsphenamine. It has since been advocated in the treatment of amebic dysentery and in other diseases due to intestinal protozoa. In a case of colitis, therefore, due to such organisms, stovarsol might conceivably be useful. The Powers-Weightman-Rosengarten Company (Philadelphia) market it in 0.25 Gm. tablets.

The reason for the unsatisfactory state of the therapy of mucous colitis lies in the fact that it is a symptom complex rather than a disease. Colonic hypersecretion of mucus may be caused by such a variety of mechanical, chemical and nervous factors that a thorough investigation is the great essential to successful treatment. Local causes must first be sought for by thorough physical examination, by stool examination (as for intestinal parasites), by sigmoidoscopy and by roentgenoscopy. Foci of sepsis in the teeth, sinuses, tonsils or pelvis may have an etiologic relation. Only when none of these are discoverable may recourse be had to the theory of purely metabolic or nervous disturbance, and this sought for and eliminated, if possible.

In the great majority of cases, mucous colitis is merely an aggravated form of spastic constipation, due to the vicious circle of proximal colon stasis and distal colon spasm. The stasis is responsible for irritating fecal matter, which causes spasm in the transverse and descending colon; and this, in turn, aggravates the stasis. Irritant cathartics are worse than useless: they aggravate the spasm and the mucous secretion. First the spastic bowel is soothed by "pouring oil on the troubled waters" by means of oil enemas, and by taking oil perorally: olive oil, liquid petrolatum or, if necessary, castor oil. External heat is applied and belladonna administered as antispasmodics, with phenobarbital, amidopyrine, and possibly codeine as analgesics. A bland diet is indicated during the attack. Continuance of such diet, however, perpetuates the trouble, because of its constipating tendency. A change must therefore be made to a coarse laxative diet as soon as possible, which can in some cases be done suddenly, but in others must be done gradually through intervening stages of a soft laxative diet.

As worry, nervous overstrain or excitement may precipitate a spastic condition of the bowel and thus initiate the vicious circle referred to, mental hygiene forms an important background of the treatment. Especially pernicious is it for the patient to worry about his own condition. Hence attempts are made to banish this worry from the patient's mind by explaining, for instance, that the mucus evacuated is somewhat like the tears in that it is secreted in response to emotions or trifling irritation and is not due to severe organic disease.

POSSIBLE DIAGNOSIS OF SCARLET FEVER

To the Editor:—I wish you would suggest a diagnosis of the following case: A girl, 6 years old, ordinarily active, of the "nervous" type, has been subject to many spells of sore throat and "colds." Tonsils and adenoids were removed one year ago with some improvement. Previous to tonsillectomy marked eosinophilia was noted but has not been observed since tonsillectomy. The patient is rather anemic and has slight enlargement of the thyroid gland. She is of small stature but fairly well nourished. Measles occurred in February, 1927, a light case without any apparent after-effects. About April 18 she had a slight rash in the inguinal creases. Just previous to the onset of this rash there was sore throat, which continued. I was called to see her, April 25, on account of marked inflammation of the tongue. Many of the papillae were greatly enlarged, some up to the size of small split peas, so that the tongue looked papular. The entire tongue, the papillae and all the mucosa lining the lips, cheeks, palate and pharynx were intensely red and tender. The temperature was 102; the pulse, 114. April 26, after treatment with calamine lotion, the slight rash in the inguinal regions was faded out. Under local use of magnesia magma, the mouth cavity and tongue slightly improved, so that eating again became possible. By May 1 the tongue and mouth cavity were in normal condition and temperature was gone. April 28, and for a day or so afterward, there was left conjunctivitis which lasted for a couple of days. There was also left-sided headache and pain in the left side of the face. April 28 there was first noted an exfoliation at the tips of both thumbs. This process continued for several days, involving all the fingers. First a whitish area would appear on the palmar surface of the digital tip as if the skin was blistered but without any scrum. This area extended and the epidermis was pulled off by the child, leaving large areas of cutis over the whole tip and extending dorsally to the sides and bases of the nail. After a week this ceased and the child has since remained well. At no time did she appear seriously ill. The information given is incomplete, but may be sufficient for you to give some idea as to diagnosis. Please omit my name.

M.D., California.

ANSWER.—During the course of the acute illness referred to, the following symptoms are noted:

1. Pharyngitis: an eruption in the inguinal fold.
2. Enlarged papillae of the tongue, with redness and swelling of the mucosa of the mouth as well as of the palate and the pharynx.
3. In addition to this, a temperature of 102 and pulse 114 on the seventh day of the disease.
4. On the tenth day of the disease, conjunctivitis, a left-sided headache and pain in the face.
5. At this period, also, exfoliation at the tips of the thumbs, eventually involving all the fingers.

If we assemble these symptoms and attempt to interpret them, it seems reasonable to assume that the child was suffering from a scarlet fever infection. It is true that the rash

was very slight and occurred in the inguinal creases, but we know that the extent of a scarlet fever eruption varies within wide limits. A case may run its course without any eruption, or the eruption may be distributed in an irregular way. It is not uncommon to find a linear erythema on the inner aspect of the elbows, in the groins or in the popliteal spaces.

The appearance of the tongue may be regarded as an example of a strawberry tongue of scarlet fever. It is recalled that this condition is not an initial lesion but may appear as late as the sixth or seventh day and continue for two weeks.

The redness and swelling of the mouth, palate and pharynx are not unusual symptoms in scarlet fever.

While the fever was not high and the pulse not unusually rapid, nevertheless the temperature was such as might occur in a moderately severe case of scarlet fever.

The exfoliation that occurred on about the tenth day is typical and its first appearance as a whitish area has been described as the pinpoint desquamation of scarlet fever. The fact that the desquamation began at the tips of both thumbs and spread to the other fingers would confirm the assumption of the diagnosis of scarlet fever.

SALIVATION FOLLOWING OTITIS MEDIA

To the Editor:—I have a patient who is a music teacher, both vocal and instrumental. She had scarlet fever when about 16 years of age. Her health is good, but she has a chronic suppurating ear. Her chief trouble is excessive salivation. There is such a flew that when sitting in church she must continually keep swallowing. There has been hypertrophy of the sublingual glands since she had scarlet fever. Can you suggest any treatment? I cannot find anything except for mercurial stomatitis.

E. W. REED, M.D., Holton, Kan.

ANSWER.—The salivation in this case is evidently due to the middle ear disease by way of irritation of the chorda tympani. Not only for this reason but also because of the unwholesomeness of chronic suppuration anywhere in the body, steps should be taken, surgical if necessary, to eradicate this factor. For temporary symptomatic relief, mild daily saline catharsis coupled with moderate drink restriction, the employment of astringent mouth washes (zinc chloride or alum, 1 per cent) and the sublingual use of atropine sulphate (0.0006 Gm.) hypodermic tablets, as required, might be recommended.

COAL TAR OINTMENT IN ECZEMA

To the Editor:—Please inform me of the strength of crude coal tar ointment as used in eczema.

J. W. CHAMBERLAIN, M.D., Wyalusing, Pa.

ANSWER.—Crude coal tar, 2 Gm.; zinc oxide, 2 Gm.; petrolatum, 30 Gm. Dr. Charles J. White's prescription.

AMENORRHEA AND SYPHILIS

To the Editor:—I should like some information on the following case: A young married woman, now 23 years of age, menstruated regularly until her first pregnancy, four years ago. Following delivery she had abscesses of both breasts and the baby was taken from the breast. Menstruation became established and was normal until her second pregnancy. Delivery occurred in October, 1925. Breast milk lasted only a few weeks and breast feedings were discontinued. She menstruated for one day in December, 1925, and has not menstruated since. There have been no subsequent pregnancies. In February, 1926, she came to me with a secondary syphilitic rash, and the blood Wassermann reaction was strongly positive. Four injections of neoarsphenamine were given in March and April, at irregular intervals, because of the husband's attitude. Treatment was then discontinued until Dec. 27, 1926, since which time she has been given arsenic and mercury at regular intervals. The pelvic organs appear normal and the general health is excellent. What are the possible causes of this cessation of menstruation? Please omit name and address.

M.D., Ohio.

ANSWER.—From the information given, the most likely cause of the amenorrhea is syphilis. While generally in the primary and secondary stages syphilis has no especial effect on menstruation or may produce an excessive flow, there are on record three cases of amenorrhea which were apparently due to tertiary syphilis. These were reported by Meirowsky and Frankenstein (*Deutsche med. Wchnschr.* **36**:1444, 1910). The patients had had amenorrhea for periods varying from six to eight years and menstruation was restored by the use of iodide and mercury. The authors believed that the cause of the amenorrhea in these cases was a syphilitic involvement of the ovaries, but Schroeder looks on the amenorrhea as functional, resulting from the general body injury that resulted from the infection.

The breast abscesses most likely have nothing to do with the amenorrhea, especially because the patient menstruated regularly after she had the abscesses. The short period of nursing which followed the second labor is not a factor in the amenorrhea because it is not absence of nursing but active and prolonged lactation that produces the so-called lactation atrophy. Since the pelvic organs appear normal there is most likely no atrophy of the muscularis of the uterus. There probably is, however, atrophy of the mucosa.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. DeVighne, Juneau.

NATIONAL BOARD OF MEDICAL EXAMINERS, Parts I and II., Sept. 14-16. Applications should be made by August 14. Sec., Dr. John H. Rodman, 1600 Walnut Street, Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 8-9. Sec., Dr. Charles Duncan, Concord.

OKLAHOMA: Oklahoma City, Sept. 13-14. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Sept. 6. Sec., Dr. D. D. Biascoechea, Box 804, San Juan.

WEST VIRGINIA: Martinsburg, July 26. Commissioner, Dr. W. T. Henshaw, Charleston.

West Virginia March Examination

Dr. W. T. Henshaw, commissioner of the West Virginia Public Health Council, reports the oral, written and practical examination held at Charleston, March 16-18, 1927. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Of the 14 candidates examined, 12 passed and 2 failed. Twenty candidates were licensed by reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent
George Washington University Medical School	(1926)	86.3
Howard University School of Medicine	(1926)	80
Univ. of Louisville School of Medicine	(1925) 85.4; (1926)	81.6
University of Maryland School of Medicine	(1926)	88.3
Harvard University	(1925)	87.8
Jefferson Med. College of Philadelphia	(1925) 91.7; (1926)	90.8
Medical College of the State of South Carolina	(1926)	80.7
Medical College of Virginia	(1926) 85.4,	94.2
Dalhousie University Faculty of Medicine	(1926)	87.2

FAILED	Year Grad.	Per Cent
University of Maryland School of Medicine	(1926)	78.6
Meharry Medical College	(1926)	77.7

LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University Medical School	(1912)	Dist. Colum.
Emory University School of Medicine	(1917)	Georgia
University of Georgia School of Medicine	(1921)	Georgia
Rush Medical College	(1926)	Illinois
Indiana University School of Medicine	(1913)	Indiana
Baltimore University School of Medicine	(1900)	Maryland
College of Physicians and Surgeons, Baltimore	(1901)	Maryland
University of Maryland School of Medicine (1925) Maryland (1926)		Maryland
Eclectic Medical College, Cincinnati	(1926)	Ohio
Western Reserve University School of Medicine	(1917)	Ohio
Chattanooga Medical College	(1907)	Virginia
University of Tennessee College of Medicine (1925, 2) Tennessee (1926)		Kentucky
Medical College of Virginia	(1923) (1924)	Virginia
University College of Medicine	(1904)	Virginia
University of Virginia School of Medicine	(1923)	Dist. Colum.
University of Toronto Faculty of Medicine	(1921)	Penna.

Wisconsin Reciprocity Meeting

Dr. Robert E. Flynn, secretary of the Wisconsin Board of Medical Examiners, reports the meeting held at Milwaukee, April 12-13, 1927, at which 8 physicians and 1 osteopath were licensed by reciprocity. The following colleges were represented:

LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine	(1926)	Minnesota
State University of Iowa College of Medicine	(1925)	Iowa
University of Louisville School of Medicine	(1921)	Kentucky
University of Michigan Medical School	(1922)	Michigan
University of Minnesota Medical School	(1926)	Minnesota
Ensworth Medical College, St. Joseph	(1911)	Nebraska
Columbia University College of P. and S.	(1924)	New York
Western Reserve University School of Medicine	(1912)	Missouri
Osteopath		Iowa

Book Notices

ELEMENTS OF HYGIENE AND PUBLIC HEALTH. An Introduction to Preventive Medicine for Students and Practitioners of Medicine. By Charles Porter, M.D., B.Sc., M.R.C.P., Medical Officer of Health, Metropolitan Borough of St. Marylebone. Second edition. Cloth. Price, $4.50. Pp. 425, with 98 illustrations. New York: Oxford University Press, 1926.

The author has prepared this book primarily for the use of physicians. The various phases of preventive medicine and hygiene are discussed briefly and correctly. There is nothing novel in regard to either the material or the method of presentation to appeal particularly to an American audience.

BASAL METABOLISM IN HEALTH AND DISEASE. By Eugene F. Du Bois, M.D., Medical Director, Russell Sage Institute of Pathology. Second edition. Cloth. Price, $5. Pp. 431, with 92 illustrations. Philadelphia: Lea & Febiger, 1927.

This edition of a standard work on basal metabolism is written primarily for those engaged in the practice of medicine, for medical students, for physiologists and for dietitians. In the first part of the book, metabolism in health is considered. After a brief chapter on the history of the subject, fat, protein and carbohydrate metabolism are discussed at some length. Then the laws of physics of greatest importance in metabolic processes are taken up briefly and their connection with the gases of the body is considered. These fundamental considerations are followed by chapters having to do with the principles of respiration apparatus and methods of calculation; the estimation of the surface area of the body; the factors influencing normal basal metabolism, and the theories concerning it. In the second part, metabolism in disease is considered. There are chapters on undernutrition, overnutrition and obesity, diabetes, diseases of the thyroid, the relationship of basal metabolism to the suprarenal, pituitary and sex glands, diseases of the blood, heart and kidneys, basal metabolism in fever, water metabolism, and effects of diseases of the nervous system, and drugs on basal metabolism. This work, by one of the greatest authorities on the subject, is a clear and up-to-date exposition of basal metabolism so written as to be readily understandable by clinicians. The underlying physical, physiologic and chemical principles are clearly brought out in the first part, and in the second the influence of pathologic changes in various organs or systems of organs is considered with equal clarity. In this edition, which has been completely and thoroughly revised, details of methods and theories that are not generally accepted are not considered. An eminently practical work of this kind should be in the library of every internist.

LES STUPÉFIANTS. Par le docteur R. Porak, professeur aux écoles de médecine de Téhéran et de Changaï. Paper. Price, 18 francs. Pp. 348, with 43 illustrations. Paris: Gaston Doin & Cie, 1927.

The author prefers the title "stupefying agents" to "narcotics" because he denies that opium and cocaine, the chief members of the group, cause sleep when they are used properly. He denies the value of animal experimentation in this field, preferring to administer the substances under investigation to himself or others, and to deduce their action by the effects that he observes. No amount of experimentation on animals affords an adequate explanation of the actions of narcotics on man because of the greater development of man's brain, and clinical studies are essential; but the method adopted by Porak can lead only to confusion for reasons that are well known. He states that he used dogs in certain experimental studies, but the protocols which he gives afford little information. This is not an indictment of animal experimentation, but the experiments described were poorly planned, or else they do not represent the complete investigation.

Porak smoked opium and used cocaine by insufflation and recorded his sensations, his actions and the renal activity for varying periods of time. He contends that renal activity is an index of the state of the vegetative nervous system, and he says (p. 11) that during the stage of stupefaction (caused by cocaine) diuresis lessens but that it increases during the stage of excitement; hence the curve of diuresis represents exactly the successive stages through which the nervous system passes under the influence of cocaine. In an analogous manner he observed the effects of opium, hashish, codeine, acetylsalicylic acid, valerian, alcohol and coffee, in all cases attaching great importance to the curve of urinary secretion. He insists, with reference to experimentation, on the importance of variations in urinary output (p. 290) because this method of investigation permits one to follow the functional rhythm. He admits that the electrocardiograph and radioscope have great value, but he says that one cannot keep a patient under observation with them during every minute of days and weeks following the administration of a drug, and hence the thermometer and curves of diuresis have an undisputed advantage in the investigation of human pharmacodynamics.

Many of the views expressed are commonplace, and it is possible that many of the statements with which the reviewer does not agree are true; but they are not supported by evidence. It would be unjust to convey the impression that the author has not given much thought to his subject or that he has not made shrewd observations of the effects of the narcotics on man; but the book does not advance our knowledge in this difficult field and many readers will be confused rather than enlightened. Seguin is credited with the discovery of morphine in 1903. Cheinisse is credited with observations in 1923 on the effects of papaverine which Macht had made some years before. Certain terms used, such as "hydromotor center" (which is distinguished from the vasomotor center) and "vital rhythm," are difficult to interpret.

KING OF MAPLEDALE. A Loyal Dog. By Loyd Thompson. Cloth. Price, $2. Pp. 245. New York: D. Appleton & Company, 1927.

Physicians in their hours of ease are likely to be as varied in their choice of hobbies and interests as are any other group. Dr. Thompson is apparently a man of many interests, since he has written on many subjects. His present volume is the study of a dog. It will appeal equally to the boy or to the adult who has an interest in canine intelligence. It exemplifies canine psychology. Every one will love the King of Mapledale, a thoroughbred Irish setter.

TUBERCULOSIS OF THE LUNGS. A Practical Guide for General Practitioners. By H. Hyslop Thompson, M.D., D.P.H., County Medical Officer of Health and County Tuberculosis Officer for Hertfordshire, and A. P. Ford, M.R.C.S., L.R.C.P., D.P.H., Clinical Tuberculosis Officer and Deputy County Medical Officer of Health for Hertfordshire. Cloth. Price, $4. Pp. 179, with 30 illustrations. New York: William Wood & Company, 1927.

The authors must be commended for the able manner in which they have covered the subject of pulmonary tuberculosis in so small a work. Written primarily for the general medical practitioner and the tuberculosis officer under the British national health insurance act, it might be read with benefit by all who practice medicine. Its value is not for any new information but for the able and concise manner in which the authors put forth many of the essentials of this disease. One wishes at times that certain chapters might have been more complete, yet the brevity of the entire subject matter lends itself to the attention of the man desirous of information as to the latest ideas in this special field.

HANDBUCH DER HAUT- UND GESCHLECHTSKRANKHEITEN. Von J. Jadassohn. Band I.—1 Teil. Anatomie der Haut. Von B. Bloch, F. Pinkus, und W. Spalteholz. Paper. Price, 87 marks. Pp. 564, with 390 illustrations. Berlin: Julius Springer, 1927.

HANDBUCH DER HAUT- UND GESCHLECHTSKRANKHEITEN. Von J. Jadassohn. Band XIX. Kongenitale Syphilis. Von G. Alexander und Anderen. Paper. Price, 48 marks. Pp. 374, with 93 illustrations. Berlin: Julius Springer, 1927.

Originally planned by Jadassohn and Neisser in 1912 and interrupted by the war, this comprehensive system of skin and venereal diseases has finally appeared. One notes with regret that many of the distinguished authors in the original list have since died,—notably Ehrmann, Neisser, Merk and Kyrle. Volume I contains chapters on the normal anatomy of the skin by Pinkus, comprising 369 pages with 336 illustrations. The subject is taken up in a broad phylogenetic manner with an unusually detailed description of the minute anatomy of the skin. The comparative anatomist, the

embryologist and the anthropologist will find many points of interest. The research worker in dermal histology will welcome the digest of the extensive literature with a complete bibliography at the end of each chapter, and will find the graphic reconstruction of dermal structures of great value. There are sections on the racial characteristics of hair, on the ekkrine and apokrine glands and many other subjects that are usually not touched on in anatomic textbooks. Spalteholz has an excellent account of the blood vessels of the skin in a chapter of fifty-two pages. Bloch requires ninety-nine pages to describe the derivation of melanin, its chemistry and the biochemical process of pigment formation, especially as elucidated by his dopareaction. The nature of the material presented in this volume makes it a difficult task for the reviewer, but that it has been done with the usual characteristically germanic thoroughness and accuracy is obvious. If the character of the other volumes of the system is in line with that of this volume, it will become for many years the standard reference work for the dermatologist.

Volume XIX devotes 374 pages to congenital syphilis. The general pathology is taken up by Rietschel, congenital syphilis of the skin and mucous membranes by Lederman, its visceral and nervous manifestations by Hochsinger, the eye involvement by Igersheim, the ear by Alexander, the dental changes by Kranz, general diagnosis and prognosis by Zumbusch, serology by Lesser, treatment by Erich Muller, and prophylaxis by Boas. This volume has the advantage of better condensation of the material. Due credit is given American authors for their contributions to the subject. Many of the colored illustrations have been taken from the Finkelstein-Galewsky-Halberstaedter Atlas, and are obviously from moulages. Pediatricians and syphilologists will find this a concise and well rounded exposition of every phase of congenital syphilis.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

CLINICAL PHYSIOLOGY (A Symptom Analysis). In relation to Modern Diagnosis and Treatment. A Text for Practitioners and Senior Students of Medicine. By Robert John Stewart McDowall, D.Sc., M.B., F.R.C.P., Professor Physiology, King's College, University of London. With an introduction by W. D. Halliburton, LL.D., F.R.C.P., F.R.S. Cloth. Price, $7. Pp. 383, with illustrations. New York: D. Appleton & Company, 1927.

Physiology as needed by the practitioner in the interpretation of the signs and symptoms of disease.

THE QUARTZ MERCURY VAPOUR LAMP: Its Possibilities and Uses in Public Health and General Practice. By J. Bell Ferguson, M.D., D.P.H., Medical Officer of Health, County Borough of Smethwick. With an introduction by Sir Henry J. Gauvain, M.A., M.D., M.C., Medical Superintendent, Lord Mayor Treloar Cripples Hospitals. Cloth. Price, $2.50. Pp. 105, with 38 illustrations. New York: Paul B. Hoeber, Inc., 1927.

Another optimistic monograph on the uses of ultraviolet rays in medical treatment.

DEUTSCHE FRAUENHEILKUNDE. Geburtshilfe, Gynäkologie und Nachbargebiete in Einzeldarstellungen. Herausgegeben von Rud. Th. von Jaschke. Band III. Physiologie, Pflege und Ernährung des Neugeborenen einschliesslich der Ernährungsstörungen der Brustkinder in der Neugeburtszeit. Von Dr. Rud. Th. von Jaschke, o. ö. Professor der Geburtshilfe und Gynäkologie in Giessen. Second edition. Paper. Price, 39 marks. Pp. 522, with 119 illustrations. Munich: J. F. Bergmann, 1927.

New edition of standard textbook on care of the new-born infant.

THE THEORY AND PRACTICE OF MASSAGE. By Beatrice M. Goodall-Copestake, Examiner to the Chartered Society of Massage and Medical Gymnastics. Fourth edition. Cloth. Price, $4.50. Pp. 267, with 72 illustrations. New York: Paul B. Hoeber, Inc., 1927.

Fourth edition of standard work on massage with general principles and reference to use in special conditions.

HISTORY OF MEDICAL PRACTICE IN ILLINOIS. Volume I—Preceding 1850. Issued by The Illinois State Medical Society in Commemoration of Its Diamond Jubilee. Compiled and Arranged by Lucius H. Zeuch, M.D., a Member of the Committee Appointed for this Task. Cloth. Price, $10 per set. (To be issued in 2 volumes.) Volume I. Pp. 713, with illustrations. Chicago: The Book Press, Inc., 1927.

First volume of rather sketchy compilation of material on early medical practice in Illinois.

THE ARTIFICIAL LIGHT TREATMENT OF CHILDREN IN RICKETS, ANAEMIA AND MALNUTRITION. By Katherine M. L. Gamgee, M.R.C.S., L.R.C.P., D.P.H. With an introduction by Professor Leonard Hill, M.B., F.R.S., Director of the Department of Applied Physiology and Hygiene, National Institute for Medical Research. Cloth. Price, $4. Pp. 172, with illustrations. New York: Paul B. Hoeber, Inc., 1927.

Monograph on use of ultraviolet rays, describing apparatus and presenting case reports.

THE TRUTH ABOUT HEREDITY. A Concise Explanation of Heredity Written for the Layman. By William S. Sadler, M.D., F.A.C.S., Director of the Chicago Institute of Research and Diagnosis. Cloth. Price, $2.50. Pp. 512, with illustrations. Chicago: A. C. McClurg & Company, 1927.

A somewhat uninspired summary of current views of heredity.

TECHNIQHE IN THE MANAGEMENT OF DIABETIC PATIENTS. By Henry J. John, M.A., M.D. Cloth. Price, $1.50. Pp. 62, with illustrations. Cleveland: William Feather Company, 1927.

This is a small book, profusely illustrated. It gives about all there is to know on the subject; the illustrations are so much to the point that it is hardly necessary to read the text.

TEXTBOOK OF DISEASES OF THE SKIN AND SYPHILIS. Designed for the Use of Students and Practitioners. By Albert Strickler, M.D., Professor of Dermatology and Syphilology, Temple University, Department of Medicine. Cloth. Price, $8. Pp. 689, with 218 illustrations. Philadelphia: F. A. Davis Company, 1927.

Textbook along usual lines but with little reference to literature.

DIE OHRENKRANKHEITEN IM KINDESALTER MIT EINSCHLUSS DER GRENZGEBIETE. Von Dr. Gustav Alexander, o. Professor der Ohrenheilkunde an der Wiener Universität. Second edition. Paper. Price, 39 marks. Pp. 399, with 115 illustrations. Leipsic: F. C. W. Vogel, 1927.

Handsomely illustrated monograph on diseases of the ear in childhood.

IN EUROPE. By George S. Dougherty. Cloth. Price, $1. Pp. 163. New York: Avondale Press, Inc., 1927.

Outline of a criminologist's trip abroad.

THE MEDICAL DEPARTMENT OF THE ARMY: Its History, Activities and Organization. By James A. Tobey, Major, Sanitary Corps (Reserve), U. S. A. Institute for Government Research. Service Monographs of the United States Government. No. 45. Cloth. Price, $1.50. Pp. 161. Baltimore: Johns Hopkins Press, 1927.

DIE OHRENHEILKUNDE DER GEGENWART UND IHRE GRENZGEBIETE. Herausgegeben von Otto Körner, o. ö. Professor der Medizin, in Rostock. XI. Die Topographie des Kehlkopfgerüstes. Von Dr. Med. W. Minnigerode. Paper. Price, 18 marks. Pp. 25, with 68 illustrations. Munich: J. F. Bergmann, 1927.

PATHOLOGIE DES MÉNISQUES DU GENOU. Par Albert Mouchet, chirurgien des Hôpitaux de Paris, et Louis Tavernier, professeur agrégé à la Faculté de médecine de Lyon. Paper. Price, 18 francs. Pp. 98, with 26 illustrations. Paris: Masson & Cie, 1927.

DIE ELEKTROLYTE: Ihre Bedeutung für Physiologie, Pathologie und Therapie. Von Dr. Med. S. G. Zondek, a. o. Professor an der Universität Berlin. Paper. Price, 24 marks. Pp. 365, with 28 illustrations. Berlin: Julius Springer, 1927.

THE INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioner's Index. Forty-Fifth Year, 1927. Cloth. Price, $6. Pp. 560, with illustrations. New York: William Wood & Company, 1927.

ABSTRACT OF THE PROCEEDINGS OF THE THIRTY-SEVENTH ANNUAL MEETING OF THE ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA. Volume XIII. Cloth. Pp. 326. New York, 1927.

REPORT OF THE REGISTRAR GENERAL FOR THE FISCAL YEAR ENDED JUNE 30, 1926. Board of Health of the Territory of Hawaii, Bureau of Vital Statistics. Paper. Pp. 119. Honolulu, 1926.

VADE-MECUM DE PARASITOLOGIE. Par le Dr. J. Loiselet, professeur de parasitologie à la faculté libre de Lille. Paper. Price, 12 francs. Pp. 152. Paris: E. le François, 1927.

Miscellany

UNNECESSARY HAZARDS

We subscribe to these principles: First, the purchaser is entitled to know what he buys, particularly where health may be involved; second, when there is an approved harmless process established, mere price considerations do not justify assuming even a slight risk; and third, if the question of a hazard enters, the burden of proof should rest with those offering the new method and should not involve the expenditure of public funds.

Lead costs approximately one-tenth as much as tin, and this has been a factor in the adoption of a method for the weighing of silk in which tin-lead phosphate is the raw material rather than tin tetrachloride. The lead becomes fixed in the fiber as lead oxide, lead phosphate, or some combination of the two. Besides being a much cheaper process, silk weighted with lead salts seems to deteriorate more slowly than silk weighted with tin. There are some disadvantages. For instance, some of the lead is extracted in the benzene baths used by dry-cleaners and is ready to combine with the sulphur which may be brought into the baths in wool. The dry-cleaners have already had some difficulty, since they are not familiar with all the characteristics of the garments they treat; an occasional white flannel suit has been both cleaned and turned gray in one operation. Lead-weighted fabrics are also sensitive to the hydrogen sulphide in the air, and the lighter shades turn dark on exposure and may eventually turn almost black. Fancy what comments may be made concerning the dye and the dyer when this takes place, and think how many laundry owners and dry-cleaners, without a chemist to make an adequate defense, will make settlement for damage laid to them rather than risk the anger of a dissatisfied customer! It is doubtful whether the real culprit will be apprehended, and trouble is made all along the line because some one, for an initial price advantage, puts a process into practice without giving thought to all the ills that may be involved.

Although scientists generally agree that lead poisoning is due more to inhalation or ingestion of lead dusts, cases of poisoning from the free application of lead plaster have been reported. Much of the lead-weighted silk finds its way into commerce in underwear, and it is a question whether lead in silk on coming into contact with the various secretions of the skin might not be absorbed to some extent, for it is found that such silk treated with 3 per cent acetic acid at body temperature does lose some of the weighting material. It must also be remembered that lead is a cumulative poison and, while the hazard may be slight, individuals who might question the desirability of wearing a lead-weighted garment should be given the facts and allowed to make their own decision.

At first thought this would seem to be a problem for the public health authorities, but it is hardly fair to ask the public to pay for an investigation the outcome of which concerns first and foremost those engaged in the business of weighting silks. The public is not endangered by tin-weighted silks, and it seems clear to us that if such investigations were to be made some other than the public treasury should bear the expense. The difficulty of the problem is apparent, for silks are not all weighted to the same degree. They are not subjected to the same number or kinds of laundering operations, are not worn for equal periods or under the same conditions by various individuals and, what is even more disconcerting, individual idiosyncrasies must be considered.

Speaking for ourselves, if we must have weighted silks, we prefer a tin shirt to a lead one, and we think our fellow sufferers should be given the information and the opportunity to choose for themselves. In particular, we protest the unnecessary exposure of the public to a potential hazard, the existence of which is not dictated by any fundamental consideration.—*Industrial and Engineering Chemistry.*

Medicolegal

License Required for Sanatorium—As to Chiropractor

(Diepenbrock v. State Board of Health (N. H.), 135 Atl. R. 531)

The Supreme Court of New Hampshire says that the plaintiff petitioned for a writ of mandamus against the state board of health to compel the defendants to grant him a license to maintain a sanatorium under chapter 131 of the public laws of the state. In their answer the defendants averred that the plaintiff was already conducting an asylum for the reception of persons of unsound mind, although his application for a license for that purpose had been rejected, and they asked that he be enjoined from maintaining such asylum or sanatorium until duly licensed. The requested injunction was granted, and the plaintiff made a motion that it be dissolved, which motion was denied. The statute provides:

> No person or corporation shall locate, conduct or maintain a sanitarium or asylum for the reception of persons of unsound mind, or for the treatment of specific diseases, without having first obtained a license so to do from the state board of health. All facts relating to the character of the proposed sanitarium or asylum and of the applicant shall be thoroughly investigated by said board, who shall, at their discretion, issue a license to such applicant, with such restrictions and regulations as they may deem necessary for the protection of the interests of the state.

The power of the legislature to deal with all matters pertaining to the preservation of life and health cannot be doubted. Nor is the particular statute objectionable because it invests the defendants with power to issue licenses at their discretion. Apparently the plaintiff did not question the constitutionality of the statute but contended that, since he was a duly qualified chiropractor holding the requisite certificate, he was not subject to the provisions of chapter 131, or else was entitled to a license as a matter of right. His contention was without merit. The law applies to all persons indiscriminately. Practitioners of medicine and surgery, as well as chiropractors, are required to pass an examination and receive a license before they are permitted to practice in New Hampshire, but the license so received does not permit either a chiropractor or a physician to maintain an asylum for the reception of persons of unsound mind until the board of health, in the exercise of reasonable discretion, has granted a license for the specific purpose. The plaintiff's application for such a license was refused by the defendants, after investigation. The court, having found as a fact that he was maintaining an asylum for the reception and treatment of persons of unsound mind, without first having obtained a license from the state board of health to operate and conduct such an asylum, properly denied his motion to dissolve the injunction granted.

Loss of Teeth Compensable, Disfigurement of Hand Not

(Odom v. Atlantic Oil Producing Co. (La.), 110 So. R. 754)

The Supreme Court of Louisiana thinks that it was error not to allow the plaintiff compensation for the loss of three lower front teeth; under clause (e) of subsection 1 of section 8 of the employers' liability act of that state, which provides that, in cases not falling within any of the provisions already made, where the employee is seriously permanently disfigured about the face or head, or where the usefulness of a member or any physical function is seriously permanently impaired, the court may allow such compensation as is reasonable in proportion to the compensation specifically provided in cases of specific disability named. The court says that, in its opinion, the loss of three lower front teeth is a serious permanent disfigurement. Moreover, such a loss, within the contemplation of clause (e), is a serious permanent impairment of a physical function, since it interferes with the one, sustaining the loss, in eating. The fact that the teeth may be, and in this instance were, replaced, does not wholly remove the disfigurement or the impairment, or the seriousness of either, though it lessens it. The case does not come within the exception that the clause makes with reference to cases already provided for, and, in this court's view, the plaintiff should be allowed compensation for this

injury. As the law fixes the period for which the allowance may be made at 100 weeks, the court thinks that, in this instance, a reasonable compensation would be $3 a week for 100 weeks.

According to the testimony, the plaintiff lost one phalanx of the index finger; the first phalanx, and part of the second phalanx of the second finger; and part of the first phalanx of the third finger of his right hand, but as he did not lose as many as two of the phalanges of any one of his fingers, the court holds that he was not entitled to compensation for the phalanges lost, because the employers' liability act, as amended in 1924, nowhere provides for the loss of fewer than two phalanges of a finger, and, in fact, impliedly negatives the idea that compensation may be granted for the loss of fewer than two. The court further holds that the plaintiff could not recover under clause (e) for the disfigurement or the impairment of the use of his hand, occasioned by the loss of the phalanges mentioned, for the act impliedly negatives that he might.

Validity of Agreement in Compromise of Account

(Leff v. Adams (Texas), 289 S. W. R. 102)

The Court of Civil Appeals of Texas, in reversing a judgment which denied the plaintiff physician any relief, says that he brought this suit against an executrix in her representative capacity to recover on an alleged balance of an account for medical services rendered the deceased. The petition alleged, in substance, that the full account for the services was of the reasonable value of $711, and alleged in the alternative that the plaintiff submitted an account for services rendered in the sum of $650, that the defendant agreed and promised to pay and the plaintiff agreed to accept the sum of $650 for the services so rendered, and that the defendant thereafter paid $350 on the account, leaving a balance of $300, which the defendant had refused to pay, though often requested. The court thinks that the petition was not subject to a special exception as stating an offer in compromise of the balance sued for, or due on the account, although such an exception was sustained at the trial, after which the plaintiff undertook to prove his claim as itemized under his first count. But if an express agreement to pay, and to accept in payment, for the services rendered the balance of $300 was entered into and in part carried out, as alleged, this court sees no reason why both parties should not be bound thereby. The court also thinks that the evidence of, and a letter written by, the attorney for the estate of the deceased should have been admitted, the letter being to the effect that the defendant authorized him to write the letter and to send inclosed to the plaintiff a check for $350, with promise to remit the balance of the account at a later time. The tendered evidence was excluded on the theory that the petition stated only a compromise proposition for settlement of the account. But a valid compromise agreement, as alleged, though partly executory (yet to be performed), operates as a bar to the full account as it formerly was, and the suit would be on the unpaid balance as agreed. The court thinks that the plaintiff should have been permitted to try his case and offer his evidence on his second count.

Injuries to Workmen from Exposure to the Elements

(Consumers Co. v. Industrial Commission et al. (Ill.), 154 N. E. R. 423)

The Supreme Court of Illinois, in reversing a judgment and setting aside an award of compensation in favor of a workman whose hands were frostbitten while he was shoveling coal, says that the question in dispute was whether the injuries suffered by the man arose out of his employment. Injuries resulting from exposure to weather conditions, such as heat, cold, ice, snow or lightning, are generally classed as risks to which the general public is exposed, and not within the purview of workmen's compensation acts, although the injured person, at the time he received his injury, may have been performing duties incident to, and in the course of, his employment. The rule is generally recognized, however, that, if an employee, because of his duties, is exposed to a special or peculiar danger from the elements—a danger that is greater than that to which other persons in the community are subjected—and an unexpected injury is sustained by reason of the elements, the injury constitutes an accident arising out of and in the course of the employment within the meaning of workmen's compensation acts. If the character of the employment is such as to intensify the risks that arise from extraordinary natural causes, an accident under such circumstances is one arising out of the employment. The causative danger must be peculiar to the work, and not common to the neighborhood. It must be incidental to the character of the business, and not independent of the relation of master and servant. If the accident, under the circumstances of the employment, was merely a consequence of the severity of the elements, to which persons in the locality, whether so employed or not, were equally exposed, it is not compensable.

Treatment of Fracture—Reading of Roentgenograms

(Hollis v. Ahlquist et ux. (Wash.), 251 Pac. R. 871)

The Supreme Court of Washington, in affirming a judgment in favor of the defendants, says that the plaintiff had an oblique fracture of the tibia of the left leg at a point 3 or 4 inches below the knee. He was taken to a hospital where the defendant physician was called to treat the leg, which was manipulated, examined through a fluoroscope, and roentgenographed. The roentgenogram indicated a perfect alinement as well as apposition of the bones. A Thomas splint was then put on. After several days the swelling began to subside and a plaster cast was put on. About forty-eight hours afterward a roentgenogram was taken which showed that, while there was a perfect alinement of the bones, there was not perfect apposition, since the bones overlapped about a quarter of an inch. The defendant decided to allow nature to proceed. A bleb having become painful, the cast was split and the fluid in the bleb drawn off. The plaintiff then went home, after which he was attended by another physician.

The question of negligence offered on the trial was based on the fact that, since the roentgenogram taken when the plaintiff first went to the hospital showed what appeared to be perfect alinement and apposition of the broken bone, then any result thereafter which did not indicate the same result must of necessity be the result of unskilful treatment on the part of the physician. No evidence of any kind was offered indicating in the remotest degree that the treatment given was not the approved and customary treatment sanctioned by the medical profession. Moreover, the testimony was overlooked which showed that the roentgenogram indicating a perfect result after the plaintiff arrived at the hospital was taken after manipulation by the defendant in an endeavor to get the bone in proper position. But, even if it were true that, without manipulation, the bones were in approximately correct position after the arrival at the hospital, all the testimony showed that, with the swelling of the bruised leg, the muscles contracted and pulled the short piece of the tibia upward and away from the longer piece, which was the condition shown when the roentgenogram was taken about two days after the plaster cast was put on. It was also testified without contradiction that, as the swelling departed, the relaxation of the muscles allowed the shorter piece of the tibia to resume its normal position, and that this was what happened in this case.

Roentgenograms were taken later on before the trial, and it was contended that they showed that this result was not obtained. The roentgenograms were in evidence, and, from an examination, this court is unable to say that this result was not reached. The callus union of the bone was quite apparent, and there was nothing to show any overlapping. In such a case laymen must depend on the testimony of experts. Even the physicians depend greatly, if not wholly, on the evidence of experts in the reading of these pictures. The roentgen-ray experts as well as the physicians testified that the result reached was good, and there was no evidence that the last roentgenograms showed a lack of apposition.

Clearly the facts in this case did not demonstrate negligence, nor were there any facts the reasonable inference from which was negligence. A physician is not charged with negligence because the result is not what he desired. In spite

of all his skill and learning, there are many factors over which he has no control; hence the rule so often announced by the courts that he is responsible in damages only when he fails to possess such skill and learning as is usually possessed by the average member of the profession in the locality where he practices, and to apply that learning with reasonable care.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Detroit, September 12-16. Dr. W. P. Wherry, Bankers Reserve Life Building, Omaha, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Asheville, N. C., September 15-17. Dr. J. E. Davis, 111 Josephine Avenue, Detroit, Secretary.

American Electrotherapeutic Association, New York, September 12-16. Dr. Richard Kovacs, 223 East Sixty-Eighth Street, New York, Secretary.

Colorado State Medical Society, Glenwood Springs, September 6-8. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Idaho State Medical Association, Twin Falls, August 29-31. Dr. J. N. Davis, Kimberly, Secretary.

Missouri Valley, Medical Society of the, Des Moines, Iowa, September 14-16. Dr. Charles Wood Fassett, 115 East Thirty-First Street, Kansas City, Mo., Secretary.

Oregon State Medical Society, Salem, September 1-3. Dr. F. D. Stricker, Medical Arts Building, Portland, Secretary.

Washington State Medical Association, Tacoma, August 29-31. Dr. C. H Thomson, 508 Cobb Building, Seattle, Secretary.

MISSOURI STATE MEDICAL ASSOCIATION

Seventieth Annual Session, held at Sedalia, May 2-5, 1927

General Treatment of Fractures

The President, DR. W. H. BREUER, St. James, in the Chair

DR. CHARLES E. HYNDMAN, St. Louis: Generally speaking, the treatment of fractures has reached a very high plane of efficiency. While the restoration of anatomic relations is to be earnestly striven for, the main point to be borne in mind is the restoration of the function of the injured part in the shortest time and with the least possible deformity and discomfort to the patient. As a general rule, the simpler nonoperative treatment is most satisfactory. Early manual reduction with least manipulation wherever possible, complete immobilization and early gentle manipulation and massage of the soft parts give uniformly better results. To attempt to reduce fractures by pressure over the displaced fragments is unwise. Routine use of the roentgen ray is strongly urged in every case, always to be taken from two planes. Plaster-of-paris casts should be used cautiously in acute fractures. As a rule, fractures properly reduced and immobilized cause little discomfort. The presence of continued severe pain should be investigated. The routine use of tetanus antitoxin and thorough drainage is strongly advised in every case of compound fracture. Open operative measures should be employed only when one is sure that the closed method cannot accomplish a good functional result. It is safer to give guarded prognoses in all cases of fractured bones. Errors will be frequently avoided if all sprains are treated as fractures until proved otherwise.

Fracture of Upper and Lower Jaw

DR. W. T. COUGHLIN, St. Louis: The fundamental principles for treating fractures in general hold good in the treatment of jaw fractures. The means of their application vary. Of first importance is the diagnosis. Opening and closing of the mouth while maintaining proper occlusion is never possible in any jaw fracture if much displacement exists. Malocclusion is the rule; tenderness on pressure over the fracture point is always present. In condyle or neck fracture, the chin swings toward the involved side on opening; occlusion may be normal. Diagnosis is easy in fracture of the body and the jaw or on the gingival process of either jaw. The fingers must grasp the bone on either side of the fracture, testing for mobility. The roentgen ray is most important both before and after reduction. Reduction is the second principle. The occlusion must be regained. Reduction is often easily obtained by having the patient make an effort to open or close the mouth while manipulation is being done. Fragments that have become fixed can be drawn into line by elastic traction, special appliances being necessary. Pull and counter pull are to be used as in fractures elsewhere. Early reduction is best. Fixation is the third principle. How to obtain it is a mere detail, there being no routine practice. The fixed point important for the upper jaw is the skull itself; for the lower jaw the upper one. The fracture in the tooth bearing area is always compound. Loose teeth should be conserved if possible; teeth which are loose after three weeks should always be taken out. The mouth should never be closed while the patient is asleep. Nonunion should occur only because of loss of bony substance at the time of injury, never because of necrosis. Nonunion is best treated by bone graft. Ankylosis is generally due to lack of knowledge or carelessness, never to immobilization per se; hence, infection. The dirty mouth is responsible for a lot of trouble; cleanliness is obtainable by frequent washing. Nourishment is very important. All patients on liquid nourishment should be fed every two hours.

Injuries to the Chest

DR. THOMAS G. ORR, Kansas City: By far the greatest number of chest wounds are minor. The most important group of such injuries includes the penetrating wounds. These are always potentially serious and require special attention. To understand open wounds of the thorax, some knowledge of chest physiology is necessary. To know what happens when such a wound is made is essential to direct the proper treatment. An opening into a normal chest produces a sucking wound. This means that air passes in and out of the pleural cavity with each breath. What is the effect of this on the mediastinum? The mediastinum moves or flutters, disturbing the pressure equilibrium in the opposite pleural cavity and interfering with the return circulation of the heart. Vital capacity is important in chest wounds. As a general rule, a wound is poorly tolerated if the vital capacity is low. This is illustrated in the danger of operation on early empyema before any adhesions and walling off of exudate have taken place. Immediate death may result from open pneumothorax. Complications, such as hemothorax and pyothorax, may develop. Penetrating wounds of the thorax should always be considered serious and treated as emergencies. Life may depend on early and efficient treatment. All things being equal, a sucking wound of the chest should be closed as early as possible. Exploration of the thorax may be necessary to stop bleeding, remove foreign bodies or repair lung tissue. If this is done, a proper gas-oxygen apparatus in the hands of a competent anesthetist will furnish sufficient intrapulmonic pressure for safety.

Injuries to the Abdomen

DR. O. B. ZEINERT, St. Louis: The important thing concerning injuries to the abdomen is to decide whether the situation is grave, necessitating immediate surgical intervention, or whether the disturbance is only a temporary one. Some general rules to remember in connection with abdominal injuries as regards the conduct of the case are: 1. Immediate operation during shock is not to be thought of, except in a case of perforation or for the purpose of arresting bleeding. 2. If shock is present and no evidence of hemorrhage can be discovered, cover the patient with blankets and surround him with hot water bottles; administer atropine and saline solution either by rectum or by hypodermoclysis; when the patient reacts to this treatment, attempt a diagnosis. 3. Do not use an ice bag before a diagnosis is made; it masks the picture as morphine does. 4. Give morphine before the diagnosis is established only when it is necessary to tide patient over a time of transportation to a hospital. Even then morphine should not be given unless the doctor has decided on the necessity for operation. Among the signs that indicate the necessity of immediate operation, two are of practical importance: permanent and progressively increasing weakness and frequency of the pulse, and progressive distention of the abdomen together with tenderness and rigidity of the abdominal wall.

Injuries to the Eye

DR. J. ELLIS JENNINGS, St. Louis: The three classes of injuries to which the eye is exposed are those in which a foreign body becomes embedded in the cornea, those in which the eye is injured by a blow from some heavy object, and those in which a foreign body is driven into the eyeball.

Traumatic Injuries of Genito-Urinary System

DR. ROBERT VINYARD, St. Louis: Traumatic injuries of the genito-urinary system are serious because of hemorrhage, extravasation of urine and infection. Complicating abdominal injuries are responsible for the high mortality rate in both open and closed injuries. Hemorrhage and infection are the two most commonly fatal complications. Conservatism in treating injuries of the genital organs should be followed.

Traumatic Emergency Surgery

DR. J. E. CASTLES, Kansas City: First in importance in the care of minor injuries is the immediate application of an antiseptic to all open wounds, preferably tincture of iodine. Shock and hemorrhage must be cared for first in the more severe injuries, letting the needed surgery wait until the patient is in an improved condition, unless the waiting lessens his chances of recovery. Fractures should be immobilized before one attempts to move the patient. An early return of the patient to his occupation, or to any light work that he can do, is desirable in all cases.

Blood Transfusion

MEDICAL ASPECTS

DR. LEO J. REILLY, St. Louis: The advantage of blood transfusion is rapidly gaining wide recognition, especially in primary anemias; as a specific curative measure in the majority of secondary anemias; as a means of diluting toxins in acute infectious and toxic states, and as an immunologic factor when convalescing serum is indicated. The contraindications are acute cardiac disease, arterial sclerosis, pneumonia, hypertension, and any condition having cyanosis as a manifestation.

SURGICAL ASPECTS

DR. C. A. VOSBURGH, St. Louis: Massive hemorrhage still holds first place as an indication for transfusion from a surgical standpoint, but experience has shown that many other conditions are benefited by the procedure. It is my practice to transfuse before operation when the danger of hemorrhage is great and there is grave surgical hazard. Minor surgical operations are often required on persons who have suffered from exhausting disease and in whom even a simple procedure may be attended with grave risk. Preliminary transfusion in such cases is an ideal temporary stimulant and provides for any blood loss.

Treatment of Pernicious Anemia

DRS. A. P. MUNSCH and C. H. NEILSON, St. Louis: In the treatment of pernicious anemia, blood transfusion has given temporary relief and occasionally has been followed by a remission. A series of cases diagnosed as pernicious anemia, in which there was a striking cessation of blood hemolysis, showed a marked improvement of all symptoms. There was a rapid change in the blood picture approaching normal, either coincident with or on account of feeding these patients a so-called liver low fat diet. We have noted in some patients with no desire for food that, following gallbladder drainage according to the Vincent-Lyon method, the patient relished food. After from four to six weeks the blood pictures in these patients have so changed that a few abnormal blood observations are made.

Pernicious Anemia

DR. FRANK I. RIDGE, Kansas City: A better name would be "uncompensating or exhausting hemolytic toxemia." The changes in the hematopoietic system, the nervous system, the digestive system and the glandular system are in all probability the result of the same toxin in varying quantities and varying degrees of tissue resistance. Liver function is all essential in the neutralizing of toxins and chemical poisons. Liver is high in cholesterol content; hence the marked improvement with the present-day diet. Inspissated bile has been used by me for several years with very gratifying results. In conjunction with the liver diet the results have been even better. It is suggested that the immediate etiologic factor in pernicious anemia is an unbalanced cholesterol metabolism due either to lack of production by the liver or interference with reabsorption and utilization by the gallbladder.

Intestinal Obstruction in Infants

DR. M. B. CLOPTON, St. Louis: Pyloric obstruction forms the largest group. Seventy-six patients were operated on by the Fredet-Rammstedt method; in the first twenty-nine cases there were eight deaths, in the last forty-seven cases two deaths. The proper preparation of the dehydrated, wasted infants with salt solution, dextrose and whole blood gives the worst risk a fair chance. Operations were done under 0.125 per cent procaine hydrochloride in salt solution as an anesthetic. The second group comprised twenty-two cases of intussusception. Seventy-five per cent of all cases of intussusception occur in infants under 1 year of age. Operation during the first twelve hours is without risk and usually those children operated on before twenty-four hours get well; but from this time on the mortality rate mounts. Of the twenty-two patients seen, nine died and thirteen recovered. The next group is made up of the congenital anomalies of the bowel. There is infinite variety to these anomalies. There have been fifteen cases; most of them were hopeless, but in five cases plastic operations have given relief and the infants recovered. There were several cases of imperforate anus, with relief by operation.

The State Care of Crippled Children

DR. ARCHER O'REILLY, St. Louis: There are from 10,000 to 12,000 crippled children in Missouri, or four or five per thousand of population. The ratio is greater in the country. There is no great crippled child problem in the cities. The problem is in caring for those of the rural districts. The state is responsible for these children and their restoration is an economic necessity. Twenty-six states have some form of state care. Three combine some care of crippled children with adult vocational training. Nineteen states have no provision for crippled children. Missouri now has a state commission to investigate and propose legislation. A state society for crippled children has been organized also to study the problem and to cooperate in the care of crippled children. The care of the crippled child must be kept out of politics.

Automatic Bladder and Some Other Reflexes Associated with Gross Lesions of the Spinal Cord

DR. G. WILSE ROBINSON, Kansas City: The automatic bladder is a bladder over which the patient has no voluntary control, but which empties automatically when a certain and definite degree of distention is reached. Its advantages are obvious in those cases in which the only other method of emptying the bladder is by mechanical means. The automatic bladder is most successfully developed in those cases in which cord lesion is above the lower dorsal segments. The automatic bladder may be developed as a response to somatic stimulation. If the lower mechanisms are set free from central control by severe cord lesions, a stimulation of any reflex below the level of the lesion results in a phenomenon known as the mass reflex, all reflex centers below the lesion participating in the reaction. Scratching the skin over any part of the body surface below the lesion may evoke automatic micturition. The same stimulation may evoke automatic sweating below the level of the lesion.

The General Practitioner and the Specialist

DR. A. J. CHALKLEY, Lexington: The great majority of the afflictions in a family can be better taken care of by the well trained, conscientious, general practitioner than by the specialist. The general practitioner is more competent to handle the acute infections, as well as many of the subacute and chronic conditions. He is capable of handling the usual obstetric case, most fractures and other emergencies, and the patient gets a better and more personal service from

his family physician than from any other source. There has been too much tendency to have cases rather than patients. If specialists would do a general practice for at least five years and then devote their time and skill to the particular study to which they are best adapted we would have the ideal relationship for closer cooperation between the specialist and the general practitioner.

Leukocyte Count in Acute Surgical Conditions

DRS. M. P. NEAL and DUDLEY A. ROBNETT, Columbia: The total leukocyte count in acute pyogenic infections is the best known guide to the patient's resistance, while the most important single factor in determining the presence of pyogenic infection is the neutrophil percentage. For the full value of the blood picture one should have the total count and differential enumeration, and reduce these results to a lucid graph or index.

Suppurative Pericarditis

DRS. A. J. WELCH and ALBERT S. WELCH, Kansas City: A typical suppurative pericarditis was one of the complications that developed following abortion. The apparent selectivity in localization of the streptococci in the pericardial sac may have been exercised by the host as part of the process of getting rid of the bacteria, rather than that the bacteria themselves had specific affinity for this region.

The Diagnosis and Management of Acute Laryngeal Obstruction

DR. O. JASON DIXON, Kansas City: Practically all patients under my observation with acute laryngeal obstruction have been moribund when they reached me. Regardless of the condition of the patient with laryngeal obstruction, he is always entitled to a tracheotomy. It is impossible for any one to say which patient will recover. Patients with laryngeal obstruction should not be given any kind of a sedative. They should be kept under constant observation both before and after tracheotomy. Never should a general anesthetic be administered. Seldom is it necessary or advisable to use a local anesthetic. Every hospital should have a sterile tracheotomy set ready for use at all times. Every physician who treats the sick should have a definite idea about performing a tracheotomy. While it ranks as the oldest and most positive life saving operation, tracheotomy is today one of the least understood and most neglected operations in major surgery.

Diseases of the Fundus of the Eye from the Standpoint of the Otolaryngologist

DR. W. D. BLACK, St. Louis: Acute and chronic suppurating middle ears with intracranial disease, with or without mastoiditis, frequently give rise to fundus disturbances, principally in the nerve head or retina. Tonsillar infections are not infrequently a cause of disease of the fundus, and many astonishing results from enucleation of the tonsils are recorded. The majority of cases of eye involvement from the standpoint of the ear, nose and throat are the result of involvement of the nasal accessory sinuses.

Significance of the Ureteral Kink and Experimental Clinical Study

DRS. CLINTON K. SMITH and NELSE F. OCKERBLAD, Kansas City: In a large series of clinical cases exhibiting pain referable to the upper urinary tract, careful ureteropyelograms have been made in collaboration with clinical observations of the patients while undergoing treatment for obstruction of the ureter. It is our opinion that the ureteral kink is not responsible for pain in these cases, but that the kink is only a by-product of observation in the lower part of the ureter, which is really the pain-producing lesion.

Myoma of the Spermatic Cord

DR. W. E. LEIGHTON, St. Louis: In December, 1919, I removed a tumor of the spermatic cord which, on examination, proved to be a leiomyoma. From this study I have been able to collect only five cases of true tumors of the spermatic cord and epididymis, which, with the case I here report, make a total of six cases of myoma of the spermatic cord.

Treatment of Intracranial Hemorrhage of the New-Born

DR. JOHN D. VAN CLEVE, Malden: Intracranial hemorrhage occurs as one in each ten births. It is the cause of most stillbirths, certain paralyses, and mental retardation seen later in life. Prenatal care offers the best means of prevention. Typing the blood of both father and mother, as well as a Wassermann test, will aid in the expectancy of trouble in advance. Syphilis should be treated throughout pregnancy with arsphenamine and mercury. Better natal care, especially better judgment in the use of solution of pituitary, forceps, and handling the breech and the asphyxiated, will do much toward prevention. The infant should not be forced through too rigid or insufficiently dilated os or vulval ring. Routine taking of the bloodclotting and bleeding time will be helpful in earlier diagnosing of the hemorrhagic types. Subcutaneous, intravenous and intraperitoneal transfusion of whole blood will save lives. Lumbar puncture is the best means for confirming the diagnosis and is a great aid in the treatment. Cisterna puncture must be resorted to where the lumbar route fails. Absolute rest in the crib, feeding expressed breast milk with the Breck feeder, and sufficient water are the most important parts in the general care of the infant during the attack of intracranial hemorrhage.

Compulsory Notification of Puerperal Sepsis or Puerperal Pyrexia

DR. GEORGE CLARK MOSHER, Kansas City: At a recent conference of state directors of health, in Washington, the question of lessening septic mortality by compulsory notification was assigned to me for investigation. Eighteen state legislatures have passed laws for compulsory notification. In correspondence with health officers I was unable to find a single one where there was any attempt to enforce the law. In fact in only one state, Mississippi, did the number of cases of sepsis reported equal the number of death certificates filed, assigning puerperal sepsis or childbed fever as the cause of death. In England, where compulsory notification is the law, a modification of the law is now proposed demanding reporting also puerperal pyrexia on account of inability of the commissioner of health to carry out the provisions of the law under the terms of puerperal sepsis alone. It is certain that with compulsory notification there will be less reckless and careless work in delivery. On the other hand, if we are to be open to persecution because of unfortunate accidental infection, the question must remain *sub judice*. Our mortality is too high regardless of the comparative death rate of other nations. We must improve our own statistics by education.

Unusually Large Calculus in a Vesical Diverticulum

DRS. FRANCIS M. MCCALLUM and GEORGE H. EWELL, Kansas City: In our case a stone weighing 26¼ ounces was removed from a diverticulum in the posterior wall of the bladder. Convalescence was stormy. Death from carcinoma of the prostate, seminal vesicles and bladder occurred four years and eleven months following the removal of the stone.

Gastroduodenal Ulcer Experimentally Produced by Partial Obstruction of the Duodenum

DR. LEITH H. SLOCUMB, St. Louis: Stagnation in the duodenum plays an important part in the etiology of gastroduodenal ulcer. In the surgical treatment of these lesions great care should be exercised in eliminating any source of duodenal obstruction, whether it be arteriomesenteric in origin or due to pathologic adhesions.

Rubber Bag Inflated in Bladder as Aid to Bladder Surgery

DR. CLARENCE S. CAPELL, Kansas City: This procedure may be of value in two types of cases, vesicovaginal fistula and in some cases of subtotal cystectomy, as for ulcer, tumor or diverticulum. The bladder when opened will not become deflated and sink deep in the pelvis but will stay up in the wound making it easy to manipulate, especially in a fat woman. Through the irrigating cystoscope the degree of distention is under complete control and the light from the cystoscope may be of some value for transilluminating purposes.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

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American J. of Med. Sciences, Philadelphia

173: 597-752 (May) 1927

Heredity in Clinic. L. F. Barker, Baltimore.—p. 597.
*Anesthesia from Standpoint of Surgeon. G. P. Müller, Philadelphia. —p. 605.
*Experiences in Surgical Treatment of Angina Pectoris. E. C. Cutler, Cleveland.—p. 613.
*Carcinoma Developing in Parotid (Stenson's) Duct. J. L. Goforth, Dallas, Texas.—p. 624.
*Medical Treatment of Stomach Ulcer. F. W. White, Boston.—p. 629.
*Chronic Duodenal Ileus. D. P. D. Wilkie, Edinburgh.—p. 643.
*Acute Intestinal Obstruction: Hypochloremia and Other Blood Chemical Changes. W. D. Gatch, H. M. Trusler and K. D. Ayers, Indianapolis.—p. 649.
Jaundice. D. Riesman, Philadelphia.—p. 668.
*Cholecystography and Lyon-Meltzer Test in Congenitally Absent Gallbladder. W. Lintz, New York.—p. 682.
*Finger Puncture Method for Blood Sedimentation Test. J. Cutler, Philadelphia.—p. 687.
Transmission of Pathologic Signs from Diseased to Healthy Hemithorax. N. Michelson, Bedford Hills, N. Y.—p. 694.
Early Craniectomy as Preventive Measure in Oxycephaly and Blindness. H. K. Faber and E. B. Towne, San Francisco.—p. 701.
*General Paresis. N. W. Winkelman and G. Wilson, Philadelphia. —p. 712.

Anesthesia.—Müller urges proper study of patients, proper preparation and the use of local anesthesia to the limit. Following up the postoperative treatment with "floods" of water will reduce the mortality enormously. The principle of anociassociation is applicable to all.

Surgical Treatment of Angina Pectoris.—Cutler states that operations which divide the known sensory pathways in the sympathetic nervous system connecting the heart with the central nervous system give a fairly high percentage of satisfactory results. It is apparent also that the complete Jonnesco procedure achieves part of its success because it interferes with a motor autonomic reflex as well as interrupts the sensory pathways. Whether this operation is unduly extensive, as proposed by Daniélopolu, and whether division of the sensory elements entering and leaving the two lower cervical and the first dorsal ganglions, but without removal of the ganglions, will yield more satisfactory results is still to be proved. The failure of any single procedure to alleviate the pain in all cases leaves the definite impression that much more is to be learned.

Carcinoma of Stenson's Duct.—An instance of carcinoma developing in the parotid duct, in association with a peculiar, calculus-like structure, is recorded by Goforth. The etiologic relationship of lithiasis to malignancy is reviewed. It is suggested that cholesterol plays an important rôle in the development of gallbladder cancer. Metaplasia of epithelium occurs rarely as an atypical reaction to long continued irritation. Malignant transformation of the changed epithelium may follow this.

Medical Treatment of Gastric Ulcer.—In White's opinion a combined medical and surgical routine for gastric ulcer cases is the only logical one: medical for the large group of younger, milder uncomplicated cases; surgical for the chronic, serious resistant cases. The value of surgery is not in treating the whole group, but in curing so many difficult cases.

Chronic Duodenal Ileus.—In reviewing his group of seventy-five cases, Wilkie finds that when the duodenum was found at operation to be obviously obstructed by some more or less gross anatomic abnormality or pathologic process in the root of the mesentery, the results of a short-circuiting operation were excellent. When the duodenum was found dilated, but no very obvious obstructing cause was visible, the short-circuiting operation gave most uncertain results. In many cases an early improvement was followed by recurrence of symptoms. In no case, however, was the patient made worse by the operation.

Acute Intestinal Obstruction.—According to Gatch et al., in acute simple obstruction of the small intestine in which the bowel wall remains intact, death is not due to toxemia. The lethal factors are dehydration, reduction of blood chlorides by vomiting, and starvation. Administration of sodium chloride and water by hypodermoclysis, or by any method which preserves the salt and water balance, will prolong life through the period of starvation. In acute strangulation of the bowel, the factor of toxemia is added. Treatment with sodium chloride and water does not prevent death from this toxemia. The increase in the nonprotein nitrogen of the blood appears to result chiefly from dehydration and a rapid reduction of kidney function. Hypochloremia is an important factor in this mechanism. It is also possible that hypochloremia and dehydration cause increased tissue destruction, which adds to the nitrogenous increase. For these reasons, the administration of physiologic sodium chloride solution, by hypodermoclysis or intravenous transfusion, will be a valuable procedure in the treatment of intestinal obstruction and gastric tetany. Since strangulation of the bowel occurs in most cases of obstruction, the limitations of the treatment are obvious.

Cholecystography in Absence of Gallbladder.—Lintz reports the first case of congenitally absent gallbladder on which cholecystography and the Lyon-Meltzer test were performed. The patient presented, on the duodenal injection of magnesium sulphate, the three typical specimens of bile, including the dark (B) bile, which is supposed to come from the gallbladder.

Blood Sedimentation Test.—A new technic is described by Cutler for performing the blood sedimentation test, requiring a quantity of blood easily obtained by puncture of the finger tip, thus doing away with the necessity of venipuncture. This technic utilizes the graphic method of presentation developed by the author and described previously.

Study of General Paralysis.—Winkelman and Wilson review the records and the necropsy results in sixty-seven cases. An untreated case of general paralysis will show blood and spinal fluid evidences of syphilis. These tests will usually be markedly positive, including pleocytosis, an increased amount of globulin and the paretic gold curve. An untreated case diagnosed general paralysis without strong confirmatory laboratory backing is practically always something else. A certain limited number of cases showing mental symptoms and evidence in the blood and spinal fluid of a paralytic nature may, on microscopic studies of the brains, be proved not to be instances of general paralysis. A brain which shows a gross organic condition such as hemorrhage, thrombosis or gumma rarely shows microscopic evidences of general paralysis. Strong laboratory evidences of syphilis without mental symptoms are not enough to allow the diagnosis of incipient general paralysis.

American Journal of Physiology, Baltimore

80: 485-745 (May 1) 1927

*Gastric Motility in Vitamin B Deficiency in Dog. E. A. Smith, Chicago. —p. 485.
Site of Action of Veratrine on Skeletal Muscle. H. F. Blum and R. W. Watson, San Francisco.—p. 488.
Peristalsis in Dogfish and Ray. W. C. Alvarez, Woods Hole, Mass. —p. 493.
*Chemical Reaction Underlying Coagulation of Blood. A. Wadsworth, F. Maltaner and E. Maltaner, Albany, N. Y.—p. 502.
Rôle Played by Sizes of Constituent Fibers of Nerve Trunk in Determining Form of Its Action Potential Wave. H. S. Gasser and J. Erlanger, St. Louis.—p. 522.
Fate of Dihydroxyacetone in Animal Body. J. Markowitz and W. R. Campbell, Toronto.—p. 548.
Metabolism of Dihydroxyacetone in Pancreatic Diabetes. W. R. Campbell and J. Markowitz, Toronto.—p. 561.
Effects of Dietary Deficiencies on Growth of Certain Body Systems and Organs. J. C. Winters, A. H. Smith and L. B. Mendel, New Haven, Conn.—p. 576.
Effect of Unilateral Nephrectomy on Growth of White Rat. A. H. Smith and M. H. Jones, New Haven, Conn.—p. 594.
Circulatory Minute Volumes of Healthy Young Women in Reclining, Sitting and Standing Positions. A. H. Turner, Boston.—p. 601.

Study of Anion and Cation Effects on Water Absorption of Brain Tissue. J. A. Haldi, J. W. Rauth, J. Larkin and P. Wright, Washington, D. C.—p. 631.
Diurnal Variations in Blood Specific Gravity in Normal Dogs and Humans. G. G. Stebbins and C. D. Leake, Madison, Wis.—p. 639.
Glycogen Content of Frog's Muscle After Injection of Insulin and Its Relation to Contraction. J. M. D. Olmsted and J. M. Harvey, Toronto.—p. 643.
Posterior Pituitary Extract and Cholesterol Metabolism. R. C. Moehlig and H. B. Ainslee, Detroit.—p. 649.
Segmental Innervation of Skeletal Muscles of Frog. S. de Boer, Amsterdam.—p. 652.
Effect of Lactose on Calcium-Phosphorus Balance in Dogs. E. G. Gross, New Haven, Conn.—p. 661.
Heat Liberated by Beating Heart. C. L. Gemmill, Baltimore.—p. 668.
Inactivity and Age as Factors Influencing Basal Metabolic Rate of Dogs: V. M. M. Kunde and M. Nordlund, Chicago.—p. 681.
Quantity of Milk Present in Udder of Cow at Milking Time. W. L. Gaines and F. P. Sanmann, Urbana, Ill.—p. 691.
Synthesis of Vitamin E by Plants Grown in Culture Solutions. H. M. Evans and D. R. Hoagland, Berkeley, Calif.—p. 702.
Question of Localizing Action Currents in Muscle by Needle Electrodes. A. Forbes and A. Barbeau, Boston.—p. 705.
Changes in Clotting Time of Blood of Cats as Result of Exercise. F. A. Hartman, Buffalo.—p. 716.
Mechanical Efficiency of Mammalian Heart. R. K. Lambert and A. H. Rosenthal, New York.—p. 719.
Influence of Experimental Hypothyroidism on Gastric Secretion. H. C. Chang and J. H. Sloan, Chicago.—p. 732.
Is Thyroidectomy Primary Cause of Arrested Development of Skeletal Muscle in Cretin Sheep? E. D. Simpson, Ithaca, N. Y.—p. 735.

Gastric Motility in Vitamin B Deficiency.—Smith asserts that dogs which have lost their appetite for vitamin B deficient diets and which show initial symptoms of beriberi have normal types of gastric hunger peristalsis.

Chemical Reaction Underlying Blood Coagulation.—A process of chemical catalysis in which the ionized calcium salts function as the catalyzer under the accelerating influence of contact is described by Wadsworth et al. which not only may explain the mechanism of coagulation, but suggests an approach to the study of the relationship of various proteins of the blood to the lipoids within the cells in the adaptative processes of nutrition and immunity, and possibly also of cellular pathologic changes.

Annals of Clinical Medicine, Baltimore

5: 833-911 (March) 1927

*Splenic Neoplasms: Forty Cases. E. B. Krumbhaar, Philadelphia.—p. 833.
*Anemia in South. J. H. Musser and W. R. Wirth, New Orleans.—p. 861.
*Diphtheria Toxoid as Immunizing Agent. J. G. FitzGerald, Toronto.—p. 870.
Cancer of Lower Bowel. F. B. Cross, New York.—p. 878.
*Multiple Symmetrical Gangrene of Fat of Abdominal Wall in Alcoholic Neuritis. L. M. Warfield, Milwaukee.—p. 884.
Psychoneuroses. F. R. Starkey, Detroit.—p. 888.
Multiple Sensitization in Bronchial Asthma. G. T. Brown, Washington, D. C.—p. 893.

Splenic Neoplasms.—In 6,500 autopsies studied by Krumbhaar, forty neoplasms of the spleen were encountered in a total of 930 primary and, 1,234 secondary tumors. Of the forty neoplasms, six were primary and thirty-four secondary. Two were benign (angiomas); the other four primary tumors were sarcomas, one being a lymphosarcoma. Of the thirty-four secondary tumors, twelve were some form of sarcoma, one a myeloma and twenty-one carcinoma. Of the secondary carcinomas, the primary site was in the breast in seven cases, the stomach in five, the pancreas in three, the prostate in two and the esophagus, appendix, lip and penis in one each.

Anemia in South.—The thesis is advanced by Musser and Wirth that anemia is more prevalent in the South than in the North. This anemia is of the secondary type. Possible explanations are offered for this observation. Pernicious anemia, a definite entity, is not seen as frequently in the South as it is in the North.

Diphtheria Toxoid as Immunizing Agent.—FitzGerald states that diphtheria toxoid appears to be preferable to toxin-antitoxin as an immunizing agent. He encourages vaccination against diphtheria during the first six or eight years of life rather than later.

Fat Gangrene in Alcoholic Neuritis.—In Warfield's case, multiple symmetrical gangrenous areas involved the abdominal subcutaneous skin and fat. It was a case of severe alcoholic neuritis, adiposity, endocrinopathy (pituitary) and moderate hypertonia.

Archives Physical Therapy, X-Ray, Radium, Omaha

8: 163-220 (April) 1927

Infections of Seminal Ducts. H. C. Rolnick, Chicago.—p. 163.
Physical Therapy and Orthopedic Surgery. P. H. Kreuscher, Chicago.—p. 175.
Electrophysiotherapy in Industrial Wounds. F. H. Walke, Shreveport, La.—p. 178.
Treatment of Colle's Fracture by Diathermy and Other Methods. F. H. Ewerhardt, St. Louis.—p. 186.
Endocrines and Physiotherapy. M. Kern, Chicago.—p. 191.
Treatment of Infectious Arthritis. W. A. Johnston, Dubuque, Iowa.—p. 196.
Diathermy in Pneumonia. L. M. Otis, Celina, Ohio.—p. 202.

8: 221-278 (May) 1927

Physical Energies in Treatment of Tubercular Peritonitis. A. D. Willmoth, Louisville, Ky.—p. 221.
Static Electricity. N. E. Titus, New York.—p. 229.
Physical Therapy. J. E. G. Waddington, Detroit.—p. 237.
Heliotherapy in Chest Diseases. J. J. Singer, St. Louis.—p. 240.
Physical Therapy in Chronic Lumbar Pain. J. E. Rueth, Milwaukee.—p. 242.
Physical Therapy in Treatment of Acute Trauma to Joints. A. J. Weber, Milwaukee.—p. 246.
Physical Therapy in Orthopedic Surgery. A. O'Reilly, St. Louis.—p. 252.
Autocondensation in Hypertension. C. F. Voyles, Indianapolis.—p. 255.
Ultraviolet Ray in Dentistry. F. W. Lake, Boston.—p. 259.

Boston Medical and Surgical Journal

196: 721-762 (May 5) 1927

Fibromatosis of Pelvic Colon. P. P. Johnson, Beverly, Mass.—p. 721.
Disseminated Sclerosis with Syphilis. H. G. Wolff, Boston.—p. 723.
Jewish Opinions Regarding Postmortem Examinations. J. Gottlieb, Boston.—p. 726.
Autopsies on Jews and Gentiles. E. P. Joslin, Boston.—p. 728.
*Leukemoid Blood Picture in Syphilis. R. C. Larrabee and N. Sidel, Boston.—p. 730.
Medical Program for Private Enterprise and Cooperative Community Organization. H. P. Greeley, Madison, Wis.—p. 731.
Anomaly of Bile Ducts. I. J. Walker, Boston.—p. 733.

Leukemoid Blood Picture in Syphilis.—A case of syphilis with a leukemoid blood picture is reported by Larrabee and Sidel. On admission it was considered as a probable myelogenous leukemia, but the roentgen ray and Wassermann reports led to the correct diagnosis. Intensive antisyphilitic therapy was instituted and recovery resulted. This report is additional evidence showing that a leukemoid blood picture does not necessarily mean true leukemia.

Colorado Medicine, Denver

24: 101-132 (April) 1927

Tuberculosis in Colorado. H. Sewall, Denver.—p. 104.
Kahn Precipitation Test for Syphilis: Six Hundred Tests. C. W. Maynard, Pueblo.—p. 111.
Relativity of Ray Therapy. B. E. McGovern, Colorado Springs.—p. 116.
Restoring Function of Abdominal Organs by Operations. J. Andrew, Longmont.—p. 118.

24: 133-160 (May) 1927

Newer Aspects of Hepatic Medicine. W. A. Campbell, Jr., Colorado Springs.—p. 136.
Treatment of Neoplasms by Blair Bell Method. W. W. Haggart, Denver.—p. 143.
Diseases of Animals Communicable to Man. E. R. Mugrage, Denver.—p. 148.

Endocrinology, Los Angeles

11: 1-96 (Jan.-Feb.) 1927

*Iodine and Exophthalmic Goiter. K. Petrén, Lund, Sweden.—p. 1.
Asserted Nonexistence of Age Involution of Thymus. J. A. Hammar, Upsala, Sweden.—p. 18.
Parathyroid and Broken Bones. G. H. French, Herrin, Ill.—p. 25.
*Latent Diabetes. P. Escudero, Buenos Aires.—p. 27.

Iodine and Exophthalmic Goiter.—Petrén's experience substantiates the reports of the favorable effect that iodine exerts on the symptoms of exophthalmic goiter, on the basal metabolism and on the pulse rate, both of which are often decreased during the treatment. He uses compound solution of iodine, 5 per cent, in varying dosage, from 3 to 30 drops, once, twice or thrice daily. His experience is that roentgen-ray treatment has little or no influence on the height of the basal metabolism. He is not convinced that by the administration of iodine these patients have received any permanent benefit.

Latent Diabetes.—Escudero has devised a food for so-called hidden cases of diabetes, involving the functional exhaustion of the pancreas. For ten days the patient receives a daily meal composed of 6 Gm. of carbohydrates and 1 Gm. of protein, each, per kilogram of body weight, and the fat necessary to form a diet sufficient for the age, weight and social conditions. After this, the fasting blood sugar content is determined. In negative cases there is no rise in blood sugar content. In positive cases, the Escudero test produces a rise in blood sugar content and there is a fasting hyperglycemia.

Florida Medical Association Journal, Jacksonville

13: 224-253 (April) 1927

Proceedings of Fifty-Fourth Annual Meeting.

Georgia Medical Association Journal, Atlanta

16: 151-186 (May) 1927

County, District and State Medical Associations. C. L. Ayers, Toccoa. —p. 151.
Acute Suppurative Otitis Media. S. J. Lewis, Augusta.—p. 153.
Utility of Nonsurgical Biliary Drainage in Chronic Infectious Arthritis. G. M. Niles, Atlanta.—p. 158.
Renal Tuberculosis. J. H. Hendry, Bainbridge.—p. 159.
Treatment of Diabetes Mellitus. H. I. Reynolds, Athens.—p. 161.
Treatment of Gunshot Wounds of Abdomen: Sixty-Nine Cases. C. Bivings, Atlanta.—p. 166.

Journal of Bacteriology, Baltimore

13: 235-314 (April) 1927

Viability of Bacteria in Aqueous Suspensions. C. E. A. Winslow and O. R. Brooke, New Haven, Conn.—p. 235.
Fallacious Tendencies in Bacteriologic Taxonomy. I. C. Hall, Denver. —p. 245.
Bacterial Morphology. J. F. McDonald, J. T. Little and E. Ruckensteiner, Omaha.—p. 255.
Destruction of Acetyl-Methyl-Carbinol by Members of Colon-Aerogenes Group. F. S. Paine, Iowa City.—p. 269.
Serologic Classification of Fusiform Bacilli. P. L. Varney, St. Louis. —p. 275.

13: 315-377 (May) 1927

*Urea Splitting Bacterium Found in Human Intestinal Tract. J. V. Cooke and H. R. Keith, St. Louis.—p. 315.
Aerobic Bacteria Commonly Concerned in Decomposition of Cellulose. L. A. Bradley and L. F. Rettger, New Haven.—p. 321.
Thermotolerant Organisms as Cause of So-Called Pin-Point Colonies. A. C. Fay, Manhattan, Kan.—p. 347.

Urea Splitting Bacterium in Intestinal Tract.—The characteristics of a micro-organism commonly found in the intestinal tract of infants and older children, and having exceptional power of splitting ammonia from urea, are described by Cooke and Keith. The name *Bacterium ammoniagenes* is suggested for it.

Journal of Experimental Medicine, Baltimore

45: 753-935 (May 1) 1927

Experimental Bone Marrow Reactions: III. Polycythemia, Normoblastosis, and Erythrocytic Hyperplasia of Bone Marrow Produced by Gum Shellac. G. L. Muller, Boston.—p. 753.
Effect of Gum Shellac Solution on Surface Tension of Rabbit Serum. J. M. Hayman, Jr., Boston.—p. 771.
*Oroya Fever and Verruga Peruana: VIII. Experiments on Cross Immunity. H. Noguchi, New York.—p. 781.
Study of Pneumococci Isolated from Horses Undergoing Pneumococcus Immunization. A. B. Wadsworth and G. M. Sickles, Albany, N. Y.—p. 787.
*Kobayashi Epidemic Encephalitis Virus and Virus of Rabies. E. V. Cowdry, New York.—p. 799.
Occurrence of Degraded Pneumococci in Vivo. H. A. Reimann, New York.—p. 807.
*Virus of Foot and Mouth Disease: III. Resistance to Chemicals. P. K. Olitsky and L. Boëz, Strasbourg, France.—p. 815.
Id.: IV. Cultivation Experiments. P. K. Olitsky and L. Boëz, Strasbourg, France.—p. 833.
Oxygen Poisoning: In Mammals. C. A. L. Binger, J. M. Faulkner and R. L. Moore, New York.—p. 849.
Id.: In Cold Blooded Animals. J. M. Faulkner and C. A. L. Binger, New York.—p. 865.
Bacteriophage of d'Hérelle: VII. Particulate Nature. J. Bronfenbrenner, New York.—p. 873.
Id.: VIII. Mechanism of Lysis of Dead Bacteria in Presence of Bacteriophage. J. Bronfenbrenner and R. Muckenfuss, New York.—p. 887.
Bacterium Lepisepticum Infection: Its Mode of Spread and Control. L. T. Webster and C. Burn, New York.—p. 911.

Cross Immunity Between Oroya Fever and Verruga.—Nine monkeys (*Macacus rhesus*) and a chimpanzee which had recently recovered from an infection with the Oroya strain of *Bartonella bacilliformis* were tested by Noguchi for immunity against the verruga strain of *Bartonella bacilliformis*, as well as against the homologous strain. Complete immunity to both strains was demonstrated. The result establishes the identity of the strains, and is in agreement with the result of comparative serologic study.

Kobayashi's Encephalitic Virus is Rabies Virus.—Since the symptoms produced in experimental animals by the encephalitic virus of Kobayashi and by the virus of rabies are similar, and are accompanied by lesions which are indistinguishable, and since a cross immunity is demonstrable between the two viruses, the conclusion is advanced by Cowdry that the specimen of so-called encephalitis virus isolated by Kobayashi is in reality a specimen of rabic virus.

Virus of Foot and Mouth Disease.—Olitsky and Boëz assert that sodium hydroxide in 1 to 2 per cent solutions is an effective virucide. This fact and the cheapness of the agent suggest its use in field practice as a disinfectant.

Journal of Preventive Medicine, Baltimore

1: 279-381 (March) 1927

Scarlet Fever Isolation. P. M. Holst, Oslo, Norway.—p. 279.
*Hemolytic Streptococci in Upper Respiratory Tract of Scarlet Fever Convalescents. J. E. Gordon, Chicago.—p. 289.
Statistical Relations Between Mortality in Infancy and in Later Life. R. Jordan, New Haven, Conn.—p. 303.
Id. I. S. Falk, Chicago.—p. 311.
*Seasonal Prevalence of Diphtheria, Measles and Scarlet Fever in Different Latitudes. G. E. Harmon and R. G. Perkins, Cleveland. —p. 327.

Scarlet Fever Carriers.—Gordon asserts that the severity of scarlet fever in a measure influences the time that hemolytic streptococci remain on the mucous surfaces of the upper respiratory tract. Convalescents with positive streptococcus cultures when released from isolation commonly harbor the micro-organisms in the throat only; about one third have hemolytic streptococci in both nose and throat; very few have positive nasal cultures only. Complications definitely affect the convalescent carrier rate. Complications probably account for the chronic carrier condition in most instances. Consideration should be given to the practicability of a revision of existing isolation regulations for scarlet fever, permitting a variation in isolation time depending on negative cultures for scarlet fever streptococci.

Seasonal Prevalence of Diphtheria, Scarlet Fever and Measles.—Harmon and Perkins show that the peak of seasonal prevalence of diphtheria, measles and scarlet fever in the United States occurs from one to three months earlier in the South than in the North. In the case of diphtheria and scarlet fever, the points of minimum prevalence occur in the South earlier than in the North. The analysis of the material on which their paper is based would seem to supply additional evidence in support of the view that latitude has an effect on the seasonal distribution of the prevalence of the three diseases considered.

Journal of Urology, Baltimore

17: 469-523 (May) 1927

Cystography in Diagnosis of Tuberculosis of Genito-Urinary System. N. Blaustein, New York.—p. 469.
Cystometric Bladder Pressure Determinations. D. K. Rose, St. Louis. —p. 487.
Traumatic Rupture of Bladder and Urethra. W. C. Stirling, Washington, D. C.—p. 503.
Patent Urachus Opening Through Solitary Ulcer of Bladder. D. A. Brown, Madison, Wis.—p. 509.
Congenital Urinary Incontinence with Patent Urachus, Double Uterus and Double Vagina. J. Z. Mraz, Oklahoma City.—p. 513.
*Funiculitis. C. R. O'Crowley, Newark, N. J.—p. 515.

Funiculitis Following Appendectomy.—O'Crowley reports a case of suppurative funiculitis following an operation for acute appendicitis.

Laryngoscope, St. Louis

37: 235-312 (April) 1927

Roentgen-Ray Study of Movements of Tongue, Epiglottis and Hyoid Bone in Swallowing. H. P. Mosher, Boston.—p. 235.
Congenital Occlusion of Choanae: Two Cases. W. T. Garretson, Detroit. —p. 263.
Local Anesthesia in External Operations on Nasal Accessory Sinuses. R. Harris and W. L. Simpson, Memphis, Tenn.—p. 269.

Removing Cerumen from Ear by Irrigation. C. Kaplan, New York.—p. 275.
Sponge Packs in Ozena. B. Freudenfall and S. Stein, New York.—p. 277.
Keratosis of Vocal Cord Followed by Malignancy. D. H. Jones, New York.—p. 279.
Ulceration and Stenosis of Larynx in Typhoid. J. R. Davies, Jr., Philadelphia.—p. 281.
Newer Tests for Hearing. E. P. Fowler, New York.—p. 285.
New Instrument for Placing Sutures in Tonsil Fossa. W. A. Wells, Washington, D. C.—p. 299.
Lung Abscess Following Tonsillectomy. J. D. Whitham, New York.—p. 304.

Medicine, Baltimore

6: 143-339 (May) 1927

Hypotension. A. Friedlander, Cincinnati.—p. 143.

Michigan St. Med. Soc. Journal, Grand Rapids

26: 279-350 (May) 1927

Truth, Whole Truth and Nothing but Truth. R. McNair, Kalamazoo.—p. 279.
Therapeutics in Premedical Education. A. C. Curtis, Ann Arbor.—p. 283.
Diaphragmatic Hernia. R. S. Morrish and C. D. Chapell, Flint.—p. 290.
*Fragilitas Ossium: Hereditary Aspect. M. S. Rosenblatt, Detroit.—p. 292.
*Postoperative Pulmonary Atelectasis. F. J. Smith and E. C. Davidson, Detroit.—p. 295.
Word Blindness: Difficulty in Reading in School Children. F. P. Currier, Jr., and M. Dewar, Grand Rapids.—p. 300.
Oral Administration of Glucose. J. H. Dempster, Detroit.—p. 304.
*Radium Treatment of Thyrotoxicosis. R. E. Loucks, Detroit.—p. 305.
Two Cases of Tularemia in Michigan. E. L. Compere, Jr., and J. H. McMillin, Detroit.—p. 309.
Fetal Death During Pregnancy Due to Umbilical Cord Around Neck. R. S. Siddall, Detroit.—p. 310.
Hyperthyroidism Masked by Diabetic Syndrome. R. J. Hubbell, Kalamazoo.—p. 311.

Hereditary Fragilitas Ossium.—A case of hereditary fragilitas ossium is reported by Rosenblatt, with the family tree extending through four generations and with the progress through one fracture. In this family, brittle bones have not skipped a generation. Practically all members have had this symptom; several have had blue sclera and deafness. Unlike the observations of Key, blue sclera were not dominant; and members not having this condition had fragile bones.

Postoperative Pulmonary Atelectasis.—Smith and Davidson report seven cases in which pulmonary atelectasis was recognized as a complication of abdominal operative procedures. The clinical course in these patients has followed the usual rule of a sharp onset within twenty-four or forty-eight hours after an abdominal operation, with a few days of decided thermal reaction, tachypnea and tachycardia, the patients showing slight cyanosis, and unilateral pulmonary consolidation, with displacement of the heart toward the affected side. Prompt recovery took place in all. The course was rapid in evolution and was entirely unlike either lobar or bronchopneumonia. The constitutional reaction of the patient did not parallel the extent of involvement of lung tissue.

Radium Therapy in Thyrotoxicosis.—Loucks regards radium as being almost a specific in the treatment of toxic goiter.

Military Surgeon, Washington, D. C.

60: 253-380 (March) 1927

Medical Tactics of Joint Army and Navy Operations. W. L. Mann and A. D. Tuttle.—p. 253.
Bone Grafting for Mandible Defects. R. H. Ivy and B. M. Epes.—p. 286.
Classification of Small Medical Library. J. M. Phalen and F. H. Garrison.—p. 294.
Army Medical Department in War of 1812. J. D. Edgar.—p. 301.
Fracture of Patella. J. W. Davis.—p. 314.
Army's Field Medical Records. A. G. Love.—p. 319.
Making "Devil-Dogs" Fit to Bite. C. V. Rault.—p. 326.
Two Patient One-Horse Litter Cart. J. P. Fletcher.—p. 329.

60: 381-512 (April) 1927

Surgical and Evacuation Hospitals. C. C. McCornack.—p. 381.
Sanitation of Panama Canal Zone. W. P. Chamberlain.p—. 397.
Fly Trap Stand. H. B. McMurdo.—p. 423.
Myocardium in Physical Examinations. G. W. Cooper.—p. 425.
Spondylolisthesis in Males. H. C. Maxwell.—p. 438.
Dreyer Method for Determination of Physical Fitness. J. M. Swan and F. H. Evans.—p. 442.
Recollections of Old Medical Officers. H. C. Yarrow.—p. 449.

60: 513-643 (May) 1927

Related Factors in Diseases of Man and Animals. J. G. Hardenbergh.—p. 513.
Acute Nephritis in Soldiers on Active Duty. N. M. Keith.—p. 529.
Emergency Splinting of Fractures for Transport. N. T. Kirk.—p. 532.
Chastity of Young Men. P. M. Ashburn.—p. 541.
"Bifocalists" at Our Medical Leavenworth. G. M. Blech.—p. 543.
Apparatus for Measuring and Recording Reaction Time Periods. F. H. Thorne.—p. 555.
Sciatic Pains: Differentiation. F. P. Moersch.—p. 562.
Immunization of C. M. T. C. Trainees at Camp McClellan, Alabama. H. F. Lueking.—p. 573.
*Treatment of Snake Bite Poisoning. R. F. Metcalfe.—p. 577.
Insect Pests in Texas. J. W. Sherwood.—p. 581.
Recollections of Old Medical Officers. H. C. Yarrow.—p. 588.

Treatment of Snake Bite Poisoning.—Metcalfe employs the usual method of treatment: application of a tourniquet and neutralization of the poison with potassium permanganate. Following the application of the tourniquet, a crucial incision is made at the site of the bite. The free bleeding washes out a portion of the venom, and this should be followed immediately by injection into the tissues circling the wound of potassium permanganate solution (1:3,000 or 1:5,000), with an ordinary hypodermic syringe, to a depth of about one-half inch. If a vacuum cup or similar suction apparatus is available, it is well to apply it to the wound immediately after the crucial incision is made. This treatment is followed by the application to the wound of a moist dressing of 1:5,000 potassium permanganate solution. The patient should be placed in bed and carefully watched for the appearance of systemic symptoms. The tourniquet should not be left in place more than thirty minutes. It should be loosened for a few seconds to allow the reestablishment of the circulation, and to permit a small portion of the venom, which may have remained unneutralized in the tissues of the affected part, to escape into the general circulation. The tourniquet is again tightened and allowed to remain in place for another twenty minutes. In the meantime, any small amounts of unneutralized venom which may have reached the general circulation are being eliminated from the body by the body tissues. After the tourniquet has been released the second time, it may be discarded if cardiac symptoms or signs of depression are not apparent. When the bite occurs on the head or trunk, where a tourniquet cannot be used, a slightly stronger solution of potassium permanganate should be used and suction applied.

Nebraska State Medical Journal, Norfolk

12: 121-160 (April) 1927

Nitrous Oxide-Oxygen in Oral Operations. B. H. Harms, Omaha.—p. 121.
Medicine: Retrospect and Prophecy. F. B. Young, Gering.—p. 124.
Tuberculous Peritonitis. M. Emmert, Omaha.—p. 132.
Relation of Faulty Nutrition to Heart Disease: 21. V. E. Levine, Omaha.—p. 134.
Pathology of Glaucoma. D. D. Sanderson, Lincoln.—p. 140.
Shoulder Dislocation: Applied Anatomy. R. R. Best, Omaha.—p. 142.
Juvenile Tuberculosis. E. W. Hancock, Lincoln.—p. 143.

12: 161-200 (May) 1927

Diseases of Thyroid. C. Andrews, Lincoln.—p. 161.
Fracture of Acetabulum with Pyemia. H. F. Johnson, Omaha.—p. 165.
Anemias in Childhood. H. B. Mueller, Lincoln.—p. 166.
Blood Transfusion. M. G. Wohl, Omaha.—p. 169.
*Communities Should Be Made Safe for Maternity. E. C. Sage, Omaha.—p. 173.
Modern Aspects of Nutrition: Pathology of Malnutrition. V. E. Levine, Omaha.—p. 175.
Shoulder Paralysis Due to Birth Injury (Erbs' Paralysis). H. W. Orr, Lincoln.—p. 180.
Mental Hygiene. T. L. Houlton, Omaha.—p. 182.
Menace of Modern Surgery. G. O. Remy, Ainsworth.—p. 184.
Two Cases of Tularemia. A. C. Barry, Norfolk.—p. 191.

Maternal Mortality in Nebraska.—Sage makes a rating of the counties in Nebraska according to the maternal mortality per thousand births. In the year 1926, thirty-nine counties did not have maternal mortality. The highest mortality in the remaining fifty-four counties was 20 per cent. Forty-two counties had less than 10 per cent mortality; fifteen counties had less than 5 per cent.

New York State Journal of Medicine, New York

27: 391-447 (April 15) 1927

Tuberculosis Work in Cattaraugus County. A. K. Krause, Baltimore.—p. 391.
Hospitalization Program for Tuberculous. D. R. Lyman, Wallingford, Conn.—p. 396.

Tuberculosis Work in Cattaraugus County. L. Brown, Saranac Lake.—p. 400.
Tuberculosis and General Practitioner. E. R. Baldwin, Saranac Lake.—p. 401.
Six Cases of Trichinosis in One Family. M. Weiss, Binghamton.—p. 402.
Scheme for Nurse Education. A. T. Lytle, Buffalo.—p. 404.

Occupational Therapy and Rehabilitation, Baltimore

6: 87-174 (April) 1927

Occupational Therapy for Sanatorium Patients. D. Townsend, Johnson City, Tenn.—p. 87.
Id.: Educational Principles. H. M. Pollock, New York.—p. 99.
Id.: In General Hospitals. J. A. Mattison, Sawtelle, Calif.—p. 105.
Id.: In Private Mental Hospital. R. M. Chapman, Towson, Md.—p. 113.
Id.: Organization of Department. E. C. Slagle, New York.—p. 125.
Id.: Dynamic. P. G. Gundersen, White Plains, N. Y.—p. 131.
Precautions Necessary with Orthopedic Cases. M. Taylor, Boston.—p. 137.
Id.: Combining with Curative Work in Tuberculosis Sanatoriums. G. Sample, Oteen, N. C.—p. 143.
Id.: Establishment of Clinics in Cooperation with State Department of Reeducation of Disabled Persons. M. R. Emig, Duluth, Minn.—p. 149.
Id.: In Outpatient Clinic for Mental Cases. M. Emery, New York.—p. 155.
Waste Material Available in Large Mental Hospital. H. Theis, New York.—p. 161.

Philippine Islands Med. Association Journal, Manila

7: 69-108 (March) 1927

Topographic Distribution of Leprosy in Philippines. L. E. Guerrero, Manila.—p. 69.
Effect of Pulmonary Tuberculosis on Vital Capacity. I. Concepcion, Manila.—p. 91.
Foreign Bodies in Stomach. C. D. Franco, Manila.—p. 93.
Labyrinthectomy. A. R. Ubaldo and V. C. Alcantara, Manila.—p. 97.

Physiological Reviews, Baltimore

7: 189-362 (April) 1927

Distribution of Iodine with Special Reference to Goiter. J. F. McClendon, Minneapolis.—p. 189.
Question of Cardiac Tonus. W. J. Meek, Madison, Wis.—p. 259.
Current Views of "Internal Secretion." S. Vincent, London.—p. 288.
Physiologic Effects of Tropical Climate. E. S. Sundstroem, Berkeley, Calif.—p. 320.

Public Health Reports, Washington, D. C.

42: 923-1029 (April 8) 1927

Physiologic Effects of Abnormal Temperatures and Humidities: Literature. R. R. Sayers and S. J. Davenport, Washington, D. C.—p. 933.

Radiology, St. Paul

8: 277-368 (April) 1927

Diagnosis and Prognosis of Neoplastic Lesions of Bones. W. C. MacCarty, Rochester, Minn.—p. 277.
*Exostosis. H. W. Meyerding, Rochester, Minn.—p. 282.
Bone Lesions of Hand and Foot. M. Kahn and L. C. Cohn, Baltimore.—p. 289.
Radium Treatment of Nevi. Z. A. Johnston, Pittsburgh.—p. 292.
*Size of Heart: Normally and in Organic Disease. J. A. E. Eyster, Madison, Wis.—p. 300.
Correlation of Roentgenograms, Clinical Findings and Blood Pressure in Three Hundred Cases. C. E. Ide, Milwaukee.—p. 307.
Influence of Radiation Quality on Erythema Dose Measured in Physical Units. W. H. Meyer and O. Glasser, New York.—p. 311.
Analgesic Property of Roentgen Rays. A. U. Desjardins, Rochester, Minn.—p. 317.
Gastric Carcinoma Treated by Radium. J. Muir, New York.—p. 330.
Localization of Foreign Bodies in or About Eye. H. P. Mills and W. W. Watkins, Phoenix, Ariz.—p. 336.

Exostosis.—Meyerding discusses 265 exostoses observed and roentgenographed in 232 patients who were operated on. The diagnoses were verified pathologically. Excision alone was performed in 61 per cent, and excision and cauterization in 38 per cent. Recurrence was noted in 10 per cent. About 75 per cent of the patients were heard from after being dismissed from observation, and 83.8 per cent of them reported that they had been cured. Five deaths, from one to nine years after operation, were reported; there was no surgical mortality.

Size of Heart.—The distribution of certain mensurations made from the frontal and lateral orthodiagrams of 424 human hearts, including normal subjects and cases of chronic heart disease, is presented by Eyster. The mensurations include the area and transverse diameter of the frontal plane silhouette, and the retrocardiac space in the lateral plane. The former measurements are compared with the prediction tables previously published. It is found that the measurements in cases of clinical hypertrophy differ sufficiently from the normal to justify the conclusion that cardiac mensuration is a valuable method for determining the existence of cardiac hypertrophy, and compares favorably in its degree of precision with other useful methods applied to clinical medicine.

Rhode Island Medical Journal, Providence

10: 49-64 (April) 1927

Cesarean Section. B. C. Hirst, Philadelphia.—p. 49.
Subconjunctival Method of Cataract Extraction. J. L. Dowling, Providence.—p. 50.

10: 65-80 (May) 1927

Intestinal Obstruction. E. B. Smith, Providence.—p. 65.
Presenting Symptoms in Urology. H. Jameson, Providence.—p. 67.

South Carolina Med. Assoc. Journal, Greenville

23: 335-362 (April) 1927

State Convention Number.—p. 335.

Tennessee State Medical Association Journal, Nashville

19: 271-297 (Feb.) 1927

Acute Traumatic Spinal Injuries. M. B. Hendrix, Memphis.—p. 271.
Spontaneous Rupture of Heart. O. S. Warr, Memphis.—p. 276.
Bilateral Duplication of Ureters and Renal Pelves. C. F. Anderson, Nashville.—p. 281.
Deviated Septum. S. Lawwill, Chattanooga.—p. 284.
Diagnosis of Bladder Atony. T. D. Moore, Memphis.—p. 286.
Surgery of Nervous System. T. D. McKinney, Nashville.—p. 293.

20: 1-31 (May) 1927

Surgical Cure of Gastric and Duodenal Ulcer. W. D. Haggard, Nashville.—p. 1.
Tannic Acid Treatment of Extensive Burns. M. B. Davis, Nashville.—p. 6.
Value of Roentgen Ray in Carcinoma of Esophagus. C. H. Heacock, Memphis.—p. 12.
Surgery of Prostatic Obstruction. J. R. Caulk, St. Louis.—p. 16.
Diagnosis of Bone Sarcoma. E. D. Newell, Chattanooga.—p. 21.
Physician—Yesterday, Today and Tomorrow. M. F. Haygood, Knoxville.—p. 24.

Virginia Medical Monthly, Richmond

54: 1-68 (April) 1927

Physiology of Liver. F. C. Mann, Rochester, Minn.—p. 1.
Liver Function from Standpoint of Diagnosis. W. B. Martin, Norfolk.—p. 5.
Gall-Tract Diseases: Roentgen-Ray Studies. F. M. Hodges, Richmond.—p. 9.
Id.: Medical Treatment. J. C. Flippin, University.—p. 11.
Id.: Surgical Treatment. H. H. Trout, Roanoke.—p. 14.
Prostatectomy. R. C. Bryan, Richmond.—p. 20.
Management of Ureteral Calculi. A. I. Dodson, Richmond.—p. 25.
Prevention of Syphilis. D. C. Smith, Charlottesville.—p. 28.
Coronary Occlusion. T. D. Jones, University.—p. 32.
Two Cases of Perforation of Duodenal Ulcer in Hospital. J. C. Motley, Abingdon.—p. 35.
Skull Fractures. H. L. Skinner, Ellis Island, N. Y.—p. 40.
Hemangioma of Liver. B. F. Eckles, Richmond.—p. 46.
Puerperal Eclampsia. C. S. Webb, Bowling Green.—p. 50.

West Virginia Medical Journal, Charleston

23: 225-280 (May) 1927

Treatment of Endocervicitis. L. Brady, Baltimore.—p. 225.
Prenatal Care: Pelvimetry. D. L. Hill, Wickham.—p. 234.
Normal Labor. M. S. Doak, Price Hill, W. Va.—p. 239.
Treatment of Malignancies. R. J. Behan, Pittsburgh.—p. 241.
Our Obligation to Children of Our Communities. A. A. Shawkey, Charleston.—p. 244.
Cachectic Aphthae (Riga's Disease). C. M. Bray, Morgantown.—p. 249.
Subdeltoid Bursitis. C. F. Fisher, Richwood.—p. 250.
Spinal Column Anomaly: Absence of Seven Dorsal Vertebrae. A. A. Shawkey and A. C. Lambert, Charleston.—p. 252.
Hydrophobia: Case. M. S. Doak, Price Hill.—p. 253.
Right Hemicrania (Trigeminal Neuralgia) of Syphilitic Origin. W. S. Magill, Morgantown.—p. 253.
Pelvic Abscess, Suggestive of Cancer. A. G. Rutherford, Welch.—p. 255.
Ruptured Appendiceal Abscess. W. A. Simpson and J. H. McCulloch, Oak Hill.—p. 256.
Mercurochrome in Sepsis. R. H. McClung and C. F. Mahood, Alderson.—p. 257.
Mediastinal or Pulmonary Tumor. W. A. Simpson and J. H. McCulloch, Oak Hill.—p. 258.
Psoriasis: Mercurochrome Therapy. W. S. Magill, Morgantown.—p. 259.
Monstrosity. D. L. Hill, Wickham.—p. 260.
Drainage and Irrigation of Empyema and Other Abscess Cavities. B. Banks, Charleston.—p. 261.
Cleft Palate. C. L. Holland, Fairmont.—p. 262.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

39: 141-186 (April) 1927

Pityriasis Rosea of Scalp. H. Haxthausen.—p. 141.
*Calcium Content of Blood Serum in Skin Diseases. G. H. Percival and C. P. Stewart.—p. 144.
*Case of Radiodermatitis and Neuritis. W. J. O'Donovan.—p. 149.

Calcium Content of Blood Serum in Skin Diseases.—The figures recorded by Percival and Stewart do not suggest that in the commoner skin diseases there is, on the whole, any great departure from the normal of the serum calcium content, any variations noted being as common in one direction as in the other.

Radiodermatitis and Neuritis.—O'Donovan records the case of a woman who contracted a roentgen-ray dermatitis and neuritis as the result of having held three heads in succession for epilation.

British Medical Journal, London

1: 751-782 (April 23) 1927

Epidemiology and Pathology of Poliomyelitis. J. Collier.—p. 751.
*Congenital Idiopathic Dilatation of Colon Treated by Stretching of Pelvirectal Sphincter. A. Fullerton.—p. 753.
Testing for Occult Blood in Feces: Study of Alleged Fallacies. A. G. Ogilvie.—p. 755.
*Bacterial Toxemia and Cardiac Pain. W. Gordon.—p. 756.
*Treatment of Carcinoma by Lead Colloids. D. C. L. Fitzwilliams.—p. 758.
Comparative Value of "Ammonia Coefficient" and Ratio Between Free and Ammonia-Combined Acid in Urine. O. C. M. Davis and F. W. Rixon.—p. 758.
Perineal and Pelvic Floor Muscles in Second Stage of Labor. R. K. Howat.—p. 759.
*Case of Hydatid Pneumothorax. R. G. Anderson.—p. 760.
Two Cases of Coins in Esophagus. K. A. Lees.—p. 761.
Hematuria Treated by Injection of Serum. L. J. Green.—p. 761.
Death from Hemorrhage from Aorta into Bronchus. T. Lindsay.—p. 761.

Treatment of Dilated Colon.—To maintain the dilatation of the pelvirectal sphincter effected manually, Fullerton introduces into the rectum a pear-shaped rubber bag, with a diameter of 1½ inches at its broadest part. The bag is then distended with water, and the tube leading from its narrow end is wound spirally round a glass rod laid across the child's buttocks, and fixed in position. The nurse rotates the glass rod at intervals, so as to increase the tension of the rubber tube and thus maintain steady pressure on the constricted portion of bowel. In a case cited, the bag was passed spontaneously twenty-four hours after its insertion. The subsequent progress of the case has been extremely gratifying. The treatment is based on the hypothesis that there is achalasia of the pelvirectal sphincter. It is suggested that this treatment might be tried before grave surgical procedures are resorted to.

Bacterial Toxemia and Cardiac Pain.—Gordon reports eight cases of cardiac pain due to some epidemic toxemia.

Lead Treatment of Carcinoma.—In more than sixty cases of malignant disease Fitzwilliams used a colloidal lead preparation containing 0.2 per cent of lead in the form of lead iodide. He says that this method of treatment cannot, and does not, attempt to replace operation. It is important that the growth should be removed as widely as possible, and the injections then given in the hope that they will attack any small foci which may have started in the internal organs.

Hydatid Pneumothorax.—Anderson reports a case of rupture of a hydatid cyst of the lung into the pleural cavity.

Glasgow Medical Journal

107: 193-264 (April) 1927

*Osteomyelitis in Childhood. W. Rankin.—p. 193.
Gonorrhea. L. W. Harrison.—p. 201.

Osteomyelitis in Childhood.—Rankin suggests that the dead bone be removed early. Then the shaft or the half next the infected end may easily be twisted out at the second or third dressing, after the initial drainage of the focus and guttering of the shaft, as far up as it is infected. The part removed is replaced by a sterile glass rod which will approximately keep up the correct length of the limb, while proper extension and plaster of paris or other fixation may be applied so as to attain the same end. Then it is possible to get a practically sterile "inner" surface to the new developing shaft, and to mold its form, by suture round the glass rod, so that excessive bone production is avoided. When the walls are becoming rigid, the glass rod is removed and the central cavity, constantly packed with antiseptic gauze, becomes smaller and smaller till closure is finally attained without the presence of irregular and infected bone cavities and pockets, such as must result when sequestra are removed piecemeal.

Journal of Anatomy, London

61: 267-386 (April) 1927

Evolution of Parallel Sulcus. J. L. Shellshear.—p. 267.
Blood Supply of Hypoglossal Nucleus. J. L. Shellshear.—p. 279.
Nature of Structural Changes in Nerve Endings in Starvation and in Beriberi. H. H. Woollard.—p. 283.
Intracranial and Extracranial Parts of Ninth, Tenth and Eleventh Nerves. N. Fahmy.—p. 298.
Development of Human Suprarenal. M. F. L. Keene and E. E. Hewer.—p. 302.
Anovular Follicles in Ovaries of Sterile Dingo and Aged Mouse. Y. Tamura.—p. 325.
Case of Superfetation in Pig. A. D. B. Smith.—p. 329.
Case of Right-Sided Aortic Arch and Persistent Left Superior Vena Cava. L. E. Hurley and A. E. Coates.—p. 333.
Two Abnormal Laryngeal Muscles in Zulu. L. H. Wells and E. A. Thomas.—p. 340.
Arterial Supply to Duodenum. E. Yule.—p. 344.
Partial Absence of Ulna and Associated Structures. A. R. Southwood.—p. 346.
Unilateral Cryptorchism in Rat. W. P. Kennedy.—p. 352.
Development of Duodenum. J. E. Frazer.—p. 356.
Case of Hydrocephalus in Infant. R. J. Gladstone and H. A. Dunlop.—p. 360.
Insertion of Pectoralis Minor Muscle. J. M. Yoffey.—p. 385.

Lancet, London

1: 857-906 (April 23) 1927

*Muscular Mechanism of Respiration and Its Disorders. C. Briscoe.—p. 857.
*Menorrhagia as Symptom of Myxedema. H. Gardiner-Hill and J. F. Smith.—p. 862.
Possibilities of Operation in Infantile Paralysis. A. H. Todd.—p. 864.
Suppurative Thyroiditis: Two Cases. L. Rogers.—p. 868.
*Advanced Carcinoma of Stomach: Two Cases. B. Turner.—p. 869.
*Cream in Infant Feeding. D. Paterson.—p. 870.
Two Cases of Bubonic Plague. H. M. Boston.—p. 870.

Action of Respiratory Muscles Modified by Orthograde Position.—By adopting the orthograde position, Briscoe says, man has, to some extent, altered the mode of action of his respiratory muscles. In animals, the mechanical act of respiration is carried out almost entirely by the diaphragm, the bony thorax being more concerned with the support of the weight of the body and in forming a case for the lungs than with expansion of the latter. In man, though the diaphragm remains the chief agent, the thorax is freed from its weight-supporting function and helps expansion. Under certain circumstances which he has described, too great a part of the work of expanding the lungs is transferred to the thorax. This involves abnormal work by some of the thoracic muscles, a response which is ontogenetically unnatural to them and which is uneconomical. With limits they function without complaint, but with greater stimuli they are driven into conditions of persistent and excessive tonus. Their protest takes the form of pain and distress. These symptoms can be relieved by the removal of the source of the stimulus, or by relieving the stress on the muscle by mechanical means.

Menorrhagia as Symptom of Myxedema.—As a result of the analysis of the menstrual history in fifty-nine cases of myxedema, the following conclusions have been reached by Gardiner-Hill and Smith: 1. Myxedema developed before the natural menopause in 56 per cent, and after the menopause in 44 per cent. 2. When myxedema developed before the natural menopause, menorrhagia was present in 78 per cent of cases. 3. Myxedema is a common sequel to the artificial menopause when the latter has been induced for menorrhagia without apparent local cause. Fifteen cases are quoted.

Suppurative Thyroiditis.—The special interest in the two cases reported by Turner lies in the almost complete lack of

symptoms found in either of them. Both patients looked extraordinarily healthy, and there was no wasting or anemia, no anorexia, and only very slight discomfort. Very little could be found on examination. In fact, without the aid of the roentgen ray and the laboratory, diagnosis would have been almost impossible.

Use of Cream in Infant Feeding.—Paterson is of the opinion that quite sufficient fat or cream is present in an ordinary diluted cow's milk feeding without any further additions. Every infant, however, breast-fed or bottle-fed, should be given cod liver oil in small doses from birth for its vitamin content rather than for its food value.

1: 907-956 (April 30) 1927

*Toxemia Due to Anaerobic Organisms in Acute Intestinal Obstruction and Peritonitis. B. W. Williams.—p. 907.
Filtrable Endothelioma of Fowl. A. M. Begg.—p. 912.
*Experimental Goiter Unrelated in Origin to Iodine. R. McCarrison.—p. 916.
Treatment of Fractures of Limbs. M. Sinclair.—p. 920.
Experimental Immunity Against Metazoan Parasites. D. B. Blacklock and R. M. Gordon.—p. 923.
*Blood Sugar Curves in Mental Disorders. R. N. Craig.—p. 925.
Addition to Rehfuss Stomach Tube. E. M. Watson.—p. 927.
Cases of Poliomyelo-Encephalitis. W. A. F. Collis.—p. 927.
Acute Infective Osteomyelitis Treated Conservatively. H. H. Brown.—p. 928.
Case of Trigeminal Neuralgia. J. W. Lloyd.—p. 928.

Nature of Toxemia in Acute Intestinal Obstruction.—The investigation reported on by Williams was begun on the hypothesis that the toxemia in cases of acute intestinal obstruction, whether organic or paralytic, was due, in part at least, to the absorption of *B. welchii* toxin from the stagnant contents of the small intestine. It is not asserted that this is the only toxin present, but it was the only toxin of which evidence was found by the most delicate tests available. The hypothesis is corroborated by the results of a therapeutic test of the use of *B. welchii* antitoxin in cases of acute obstruction and of peritonitis.

Experimental Dietetic Goiter.—A new type of goiter has been produced by McCarrison under experimental conditions in young rats, which is unrelated in its origin to iodine deficiency. It is to be distinguished etiologically, pathologically and epidemiologically from the chronic hypertrophic or adenoparenchymatous type of endemic goiter, and from the diffuse colloid type of endemic goiter. The basal factor in its causation is a diet containing more than 60 per cent of white flour or of vitamin poor carbohydrate and 20 per cent or less of protein with fats and inorganic salts (including iodine) in adequate amounts, but lacking in green vegetables or fruit. The goiter arising in these circumstances is characterized by intense secretory hypertrophy which ultimately leads to exhaustion of more or less of the epitheliums and their replacement by nonsecretory elements and fibrous tissue. These changes may be present without any marked increase in the size of the gland. It seems likely to McCarrison that this type of goiter will be found to occur sporadically among white-flour-eating peoples; that the subjects of its progressive stage will be prone to develop exophthalmic goiter, following such influences as fright, mental worry, pregnancy, lactation and attacks of acute infectious disease, and that the subjects of its retrogressive stage will exhibit greater or lesser degrees of myxedema.

Blood Sugar Curve in Mental Disorders.—The carbohydrate metabolism in ninety cases of mental disorder was investigated by Craig, but a characteristic curve was not found for any of the disorders studied. In anxiety neurosis, however, a failure to return to the original starvation is present in 87 per cent of the cases. In epilepsy and melancholia, an apparent defect in carbohydrate metabolism is present.

Medical Journal of Australia, Sydney

1: 527-560 (April 9) 1927

Interpretation and Significance of Electrocardiograms. E. F. Gartrell.—p. 528.
*Differences Between Infective Larvae of Hookworms of Man. G. M. Heydon.—p. 531.
Healed Dissecting Aneurysm Giving Rise to Appearance of Double Aorta. J. B. Cleland.—p. 538.
Gumma of Interventricular Septum of Heart Giving Rise to Heart Block. J. B. Cleland.—p. 540.
Hysterical Fugue. S. E. Jones.—p. 541.
Acute Postoperative Dilatation of Stomach. G. Brown.—p. 542.
Arsenical Neuritis Treated by Intravenous Injection of Sodium Thiosulphate. T. D. Hughes.—p. 543.
Retrobulbar Neuritis Associated with Sphenoidal and Ethmoidal Sinusitis. J. Flynn.—p. 543.

Differences Between Larvae of Hookworms.—The differences between the mature larvae of *Necator americanus* and *Ankylostoma duodenale* are described by Heydon. They are said to make available a practical method superior to that of worm counts for determining the species distribution. The method may be used to determine the species present in an individual before treating him. This is a matter of importance, since carbon tetrachloride is extremely effective against *N. americanus*, more so than oil of chenopodium. But against *A. duodenale*, a much more difficult worm to eradicate, oil of chenopodium has the higher efficiency and should always be used either alone or in combination with carbon tetrachloride, in spite of its unpleasantness. A procedure recommended for routine work is as follows: The small fecal specimen obtained is divided into two parts and if ova are found in one part, cultures are taken from the other and mature larvae obtained. These are isolated in clean water, fixed and cleared, and finally mounted by the methods described. A single measurement under a two-thirds inch objective of the distance from the esophagus to the middle of the genital rudiment will then separate the genera correctly in well over 95 per cent of cases, provided suitable cultures of the larvae have been made, and they are well nourished. If absolute accuracy in diagnosis is desired, it may be obtained by examination of the buccal cavity; this procedure is nearly as simple as the other, but requires a little practice. Time and labor are saved by examining the larvae alive if a few only are to be looked at from a culture, but not otherwise.

Tubercle, London

8: 353-400 (May) 1927

Differential Diagnosis of Nontubercular Fibrosis of Lungs in Children. C. D. Agassiz.—p. 353.
*Treatment of Chronic Tuberculosis with Sulphates of Ceric Earths, Chaulmoogra Oil and Proflavine. C. Milne.—p. 360.
Value of Complement Fixation Test in Diagnosis of Tuberculosis: Relation to Tuberculin Skin Reaction. R. B. M. K. Pai and K. V. Rau.—p. 366.

Treatment of Chronic Tuberculosis.—Milne agrees with Petroff that acriflavine and proflavine have an inhibitory action on the development of tubercle bacilli when these dyes are used in culture mediums. In the former this property is in a dilution of 1 in 50,000 and in the latter, of 1 in 25,000. The dyes as therapeutic agents in experimental tuberculosis are of no value, but instead have a tendency to accelerate the progress of the diseases. All controls outlived the treated animals.

China Medical Journal, Shanghai

41: 185-296 (March) 1927

Is Clonorchis Health Menace in China? F. Oldt.—p. 185.
Hygienic Conditions of Mission Primary Schools in Province of Shantung. C. H. Han.—p. 206.
Health Obligation of Mission Hospitals. K. H. Li.—p. 222.
Hospitals and Health. S. H. Chuan.—p. 229.
*Use of Hamster in Diagnosis of Certain Forms of Tuberculosis. J. H. Korns and Y. C. Lu.—p. 234.
*Maternity Problem of China. J. P. Maxwell.—p. 237.
Public Health Problems in Korea, as Shown by Study of Child Mortality. J. D. Van Buskirk.—p. 244.
Child Welfare Clinic. M. T. Ross.—p. 250.
Treatment of Fasciolopsiasis. C. H. Barlow.—p. 253.

Use of Hamster in Diagnosis of Tuberculosis.—Korns and Lu state that the hamster may often serve in the clinical laboratory, especially of a small hospital, as a practical substitute for the guinea-pig.

Maternity Problem in China.—Maxwell urges that special training schools for midwives should be established, well equipped and staffed, which can provide the instruction needed for those whom the government may license. A scheme for a six months' course in midwifery for midwives in training is presented.

Annales de Médecine, Paris

21: 89-168 (Feb.) 1927

*Histologic Study of Experimental Hepatic Cirrhosis. J. F. Martin.—p. 89.
Mediastinal Pleurisy and Bronchiectasis. E. Rist et al.—p. 144.

Study of Histologic Changes in Experimental Cirrhosis of the Liver.—Martin injected seventeen guinea-pigs with manganese chloride. The animals were killed from eight to thirty-five days later. Histologic examination revealed early appearance of parenchymal hepatitis, developing into cirrhosis in less than two months. The successive stages of the pathologic process were as follows: Dilatation of vessels around the portal vein, in limited parts of the liver; then lysis of chondriosomes in cells adjacent to the portal vein or to the periportal sinusoids; later granular, fatty or atrophic degeneration of these cells, followed by a mesenchymal reaction. The latter consisted in periportal and pericellular sclerosis. Finally the destroyed parenchymal particles became enclosed in the sclerotic tissue (cicatricial sclerosis). This detailed study of the subject is provided with seventeen illustrations.

Archives des Maladies du Cœur, etc., Paris

20: 65-136 (Feb.) 1927

Peripheral Circulation and Disturbances in Cardiac Rhythm. A. Luisada.—p. 65.
*Action of Calcium Chloride on the Heart. E. Frommel.—p. 85.

Study of the Action of Calcium on the Heart in Animals.—Frommel studied by means of electrocardiograms the changes in cardiac rhythm in rabbits and frogs after intravenous injection of calcium chloride. The animals presented nodal bradycardia, and disturbed intracardiac conductivity, even complete heart block or arrest of the ventricular systole. The experiments were repeated in rabbits in which the vagus was paralyzed by atropine, or was severed. The effect of calcium chloride on the heart was almost the same in these animals as in the healthy animals. Therefore, the rôle of the vagus in the action of calcium chloride is insignificant. The conclusion is that calcium may effect the myocardial fibers directly or by the route of the intracardiac ganglions. The property possessed by calcium of enforcing the cardiac contractions, enhancing the excitability of the heart and reducing its conductivity is analogous to that of digitalis. This may explain why certain authors taught that the action of the two substances was similar.

Comptes Rendus de la Société de Biologie, Paris

96: 369-440 (Feb. 18) 1927. Partial Index

*Rapidity of the Disappearance of Insulin from the Blood. L. Képinow and S. Ledebt-Petit Dutaillis.—p. 371.
*The Tension of the Cerebrospinal Fluid in Asphyxia. L. Binet and R. Piedelièvre.—p. 375.
*Lesions of the Eye and Renal Metabolism. A. Ozorio de Almeida.—p. 383.
Urinary Secretion in Animals with Ureterovenous Anastomosis. A. Ozorio de Almeida.—p. 385.
*Factors of the Susceptibility of the Spleen to Epinephrine. A. Tournade and M. Chabrol.—p. 390.
Influence of Age and Inanition on Local Edema. E. Schulmann and J. Marek.—p. 401.
Fermentation of Glucose by Beer Yeast. E. J. Bigwood and A. Wuillot.—p. 410.
Origin of the Blood Sugar. E. J. Bigwood and A. Wuillot.—p. 414.
*The Proteidic Sugar of the Blood. E. J. Bigwood and A. Wuillot.—p. 417.
*Induced Hyperglycemia and Insulin of the Pancreatic Blood. E. Zunz and J. La Barre.—p. 421.
*Blocking of the Reticulo-Endothelial System, Foreign Serum and Precipitins. N. G. Collon.—p. 427.
*Hypoglycemia in the Course of Trypanosomiasis. A. Dubois and J. P. Bouckaert.—p. 431.
The Direct Hijmans van den Bergh Reaction. M. J. Steenhout and J. P. Bouckaert.—p. 438.

Rapid Disappearance from the Blood of Insulin Injected Intravenously.—Képinow and Ledebt-Petit Dutaillis removed half of the total blood in a dog, and replaced it by the same amount of blood removed from a dog which had received an injection of insulin two minutes before. There was no reduction in the blood sugar in the recipient dog. The fact testifies to a rapid disappearance of insulin from the blood. It is probably retained in tissues rich in glycogen, as the liver or the muscles; whence it is gradually released into the blood. In Fisher and Noble's experiments the injected insulin was sometimes eliminated in its entirety in the urine.

Variations in Tension of the Cerebrospinal Fluid in the Course of Asphyxia.—Binet and Piedelièvre produced asphyxia in dogs by obstructing the trachea. An increase in the tension of the cerebrospinal fluid was manifest. By the fourth minute of asphyxia the tension had reached four times the normal. On artificial respiration, the hypertension was succeeded by hypotension, lasting for about fifteen minutes.

Rôle of the Kidney in Certain Lesions of the Eye.—Ozorio de Almeida connected both ureters with the femoral vein in a dog, thus causing the total urine to pass into the blood stream. The animals developed a purulent conjunctivitis; they died in from two to four days with signs of uremia, such as develops after bilateral nephrectomy. It is probable that toxic substances elaborated by the kidneys, acting alone or with toxins produced by other organs, caused the lesions of the eye. This may be the origin of ocular lesions occurring in patients with urinary disease. Further researches revealed an increase of urine in animals with ureterovenous anastomosis. There was no glucose or albumin in the urine. The pressure of the urinary secretion remained lower than that of the blood.

Probable Factors of Particular Sensitiveness of the Spleen to Epinephrine.—Tournade and Chabrol refer to Abderhalden and Gelhorn's experiments proving that certain amino-acids are able to enhance considerably the action of epinephrine. Further, Loeper, Decourt and Lesure have found a large amount of these amino-acids in the tissue and blood of the spleen. Evidently the sensitiveness to epinephrine is the result of the morphologic as well as of the biochemical condition of the spleen.

The So-Called "Proteidic" Sugar of the Blood.—Bigwood and Wuillot could not detect fermentiscible proteidic sugars, of the glucosid type, in the blood plasma.

Insulin of the Pancreatic Venous Blood and Induced Hyperglycemia.—Zunz and La Barre conclude from their study on dogs, that hyperglycemia induced by intravenous injections of glucose brings about an increase of insulin in the pancreatic venous blood. Researches are being carried on to explain the mechanism of this compensatory hyperinsulinemia.

Blocking of the Reticulo-Endothelial System, Elimination of Foreign Serum and Formation of Precipitins.—The reticulo-endothelial system in rabbits was blocked with trypan blue and India ink. The animals were then injected with human blood serum. The human serum in the animals' blood was measured two days later. Blocking of the reticulo-endothelial system had not impeded the elimination of the foreign serum or the formation of precipitins.

Hypoglycemia in the Course of Experimental Trypanosomiasis.—Dubois and Bouckaert found a notable hypoglycemia in rabbits and mice with experimental trypanosomiasis. The rôle of this phenomenon in the clinical picture of the disease appears to be insignificant. The authors intend later to discuss the physiologic mechanism of the hypoglycemia.

Journal de Radiologie et d'Électrologie, Paris

11: 81-128 (Feb.) 1927

Anatomic Cure of Tuberculous Osteitis. A. Delahaye.—p. 81.
Cancer of the Penis in Tonkin. A. Le Roy Des Barres and P. Heymann.—p. 89.

11: 129-192 (March) 1927

*Roentgenotherapy of the Sympathetic System in Skin Diseases. J. Gouin and A. Bienvenue.—p. 129.
Lateral Roentgenograms in Congenital Dislocation of the Hip. Regner and Le Floch.—p. 167.
Intracranial Cyst in the Frontal Region. Tarnauceanu.—p. 174.
Tarsal Scaphoiditis in Young Children. D. Galdan.—p. 175.

Roentgen-Ray Treatment of the Sympathetic System in Skin Diseases.—Gouin and Bienvenue used roentgenotherapy in 150 cases in which the skin disease was associated with disturbances of the sympathetic system. Good results were obtained in patients in whom pruritus was the predominant symptom. In nineteen cases of lichen planus, the pruritus vanished within one or two days after a single exposure, the

eruption in three weeks. The treatment proved to be effectual in fourteen cases of polymorphic erythema and in two of parapsoriasis. Other measures or special diets were not employed. In twenty-four cases of psoriasis, the roentgenotherapy resulted in disappearance of the pruritus, while the eruption was not influenced. From 4 to 5 Holzknecht units are applied to the upper part of the spine at one sitting. Sometimes the lower part of the spine is also exposed. In certain cases, the sitting must be repeated. Local or general reactions were never observed with this method.

Paris Médical

63: 421-456 (May 7) 1927

Nutritional Diseases in 1927. F. Rathery and R. Kourilsky.—p. 421.
*Biochemical Changes in Vitamin C Deficiency. G. Mouriquand and A. Leulier.—p. 436.
*Rôle of Chlorine in Nutrition. L. Ambard and F. Schmid.—p. 443.
*Basal Metabolism in Diabetes. L. Hédon.—p. 446.
Rôle of Glutathione in Phenomena of Oxide Reduction. L. Binet.—p. 452.

Biochemical Changes Associated with Vitamin C Deficiency.—Mouriquand and Leulier studied the biochemical changes in guinea-pigs with experimental vitamin C deficiency. In the blood, the p_H and the proportion of water and of sodium chloride as well as that of cholesterol, carbohydrates and urea, were normal. There was an important reduction in iron. In the lungs, the spleen and the liver, the percentage of cholesterol was normal. It was reduced in the suprarenals. The content of epinephrine remained normal. Administration of vitamin C brought about disappearance of all clinical lesions within a few days. Nevertheless defective nutrition of the organism persisted for a long time, in consequence of which the animals presented a feeble resistance to infections; they developed a special "constitution."

The Rôle of Chlorine in Phenomena of Nutrition.—Ambard and Schmid say that the more hydrochloric acid the nervous centers contain, the more easily are they irritated. Therefore a salt free diet, rendering the nervous centers less irritable, impairs the response of gastric secretion to alimentary excitation. The authors call attention to the fact that patients with dry retention of chlorine gain considerably in weight on a salt free diet. In this condition, with an ordinary diet, the proteins of the body contain an excess of hydrochloric acid. Destruction of the proteins takes place. A salt free diet, on the contrary, produces a notable increase of nitrogen in the organism and gain in weight. Ingestion of a large quantity of salt causes acute nephritis, revealed by a sudden rise of the ureosecretory constant.

The Basal Metabolism in Diabetes.—In patients with grave diabetes, who lose in weight on a diet poor in carbohydrates but rich in proteins and fats, the basal metabolism is increased. The increase may exceed 30 per cent in cases of considerable acidosis (the estimation was based on hourly production of heat per square meter of body surface). In these patients the basal metabolism is greatly reduced if they are treated first with fasting and then given a limited amount of food, so as to combat glycosuria and to increase the tolerance for carbohydrates. The reduction may be more than 40 per cent of the normal. Hundreds of tests of basal metabolism made by Hédon in depancreatized dogs showed an increase reaching 30 per cent of the normal. Evidently suppression of the internal pancreatic secretion is to be held responsible for the disturbances in the basal metabolism.

Revue de Chirurgie, Paris

65: 5-100, 1927

*Results of Sympathectomy in Twenty-Four Patients. E. Bressot.—p. 5.
Diverticulosis of Jejunum and Ileum. H. Godard.—p. 22.
Arthritis of the Hip in Osteomyelitis. J. Piquet.—p. 38.

Results of Periarterial Sympathectomy Performed in Twenty-Four Patients.—In three of the patients, the operation was done on both extremities; in nineteen cases on the brachial artery; in eight, on the femoral artery. The patients were men, most of them aged between 18 and 35. Ether or Schleich's solution was used for anesthesia. In three of nine patients with a typical or attenuated form of Raynaud's disease, the recovery is complete; it has persisted from seven to sixteen months. Notable improvement is manifest in three; slight improvement in one. The operation failed in two. A rapid and durable cure was induced in cases of chronic nonsyphilitic ulcers of the extremities. The results were encouraging in two cases of retarded consolidation of fracture of the leg bones, and in two cases of painful stumps with trophic lesions. The results were negative in cases of perforating ulcer of the foot, in varicose ulcers and in stumps in which pain was the exclusive symptom.

Schweizerische medizinische Wochenschrift, Basel

57: 337-360 (April 9) 1927

*Constitution and Infectious Diseases. Naegeli.—p. 337.
Physical Development. H. W. Itten.—p. 341. C'cn.
Suggestion in Psychotherapy. A. Maeder.—p. 349.
Surgery of Senile Prolapsus. G. Bernard.—p. 351.

57: 361-384 (April 16) 1927

External and Internal Respiration in Athletics. W. Knoll.—p. 361.
"Female Sex Hormones." E. S. Faust.—p. 368.
Diuretic Action of Mineral Waters. A. Keller-Stoppany.—p. 370.
Endothoracic Separation of Pleural Adhesions. A. Wolowelsky.—p. 373.
Turpentine-Ether Treatment of Bronchitis. W. Lanz.—p. 375.

Constitution and Infectious Diseases.—Naegeli believes in the variability of viruses. He observed grave superinfections in twelve light cases of influenza caused by a gravely ill man brought into the same room (a total of eleven deaths). In the same epidemic the infections were severe in one part of a regiment and light in the other part, stationed elsewhere. He believes that epidemic encephalitis is different from influenza (in the latter, leukopenia and grave degenerative changes in the leukocytes) and that it is a new disease. Leichtenstern's cases of influenzal encephalitis presented large hemorrhages of the brain. The mild cases of smallpox in the recent Swiss epidemic differ from true smallpox clinically and hematologically, although there is crossed immunity. The disease should be called variola nova.

Pediatria, Naples

35: 456-512 (May 1) 1927

Milk Secretion in Infants. S. Fabris.—p. 457.
*Leukopenia in Leishmaniasis. G. Arena.—p. 465.
Hypodermic Sarcomatosis in an Infant. G. Lattes.—p. 476.
Pneumococcus Peritonitis. B. Vasile.—p. 487.
Recovery from Pneumococcus Meningitis in an Infant. U. Sala.—p. 492.

Leukopenia in Leishmaniasis.—Arena confirms the leukolytic activity of serum from the majority of kala azar patients. The destructive action is most pronounced against the neutrophilic leukocytes.

Policlinico, Rome

34: 595-630 (April 25) 1927

Enzyme Reaction in Pulmonary Tuberculosis. G. Luzzatto-Fegiz.—p. 595.
Subtotal Hysterectomy at Term. L. Urbani.—p. 599.
Heliotherapy with Filters. R. Bellantoni.—p. 601.

34: 631-666 (May 2) 1927

*Malta Fever and Bacillus Abortus. F. Bua.—p. 631.
Treatment of Tuberculous Peritonitis with Pneumoperitoneum. D. Santorsola.—p. 636.
Urethritis. V. Simonini.—p. 639.

Malta Fever and Bacillus Abortus.—Bua obtained the same results in malta fever when using cultures of *Bacillus melitensis* or of *Bacillus abortus* for intradermal tests.

Riforma Medica, Naples

43: 217-240 (March 7) 1927

Theory of Diabetes. A. Luisada.—p. 217.
Thrill in Arteriotracheal Grafts. P. Leone.—p. 221.
Prognosis and Treatment of Uremia. F. Russi.—p. 222.
Boveri's Test of the Cerebrospinal Fluid. U. Beggiato.—p. 233.

43: 337-360 (April 11) 1927

*Rhinopharyngeal Diseases and the Pituitary. A. Salmon.—p. 337.
Death from Neoarsphenamine. G. Benassi.—p. 339.
Serodiagnosis of Syphilis. O. Sciarra.—p. 344.
Clinical Anaphylaxis. D. Franceschelli.—p. 346.
*Dystrophic Teeth and Congenital Syphilis. G. Cirillo.—p. 355.
Hemolysis in Typhoid. R. Silvestrini.—p. 358.
Treatment of Tuberculous Peritonitis with Pneumoperitoneum. D. San-

Rhinopharyngeal Diseases and the Pituitary.—Salmon claims priority as to observations on the occurrence of pituitary syndromes in diseases of the pharynx and nose.

Nevertheless, he appreciates Citello's later clinical observations and experimental work. He believes that the coincidence of the symptoms speaks for some influence of the pituitary in diabetes insipidus, obesity and sleepiness, although he does not deny the existence of hypothalamic centers.

Dystrophic Teeth and Congenital Syphilis.—Cirillo thinks that a subject with congenital syphilis may—exceptionally—have normal teeth. But he doubts that there are subjects with dystrophic teeth, who have not congenital syphilis.

Rivista di Clinica Pediatrica, Florence

25: 217-288 (April) 1927

*Ultraviolet Rays and Carbohydrate Metabolism. U. Ferri.—p. 217.
*Measuring Body Surface. G. Frontali.—p. 241.
Apparatus for Aspiration. B. Trambusti.—p. 256.
*Surveillance After Intubation. B. Trambusti.—p. 267.

Ultraviolet Rays and Carbohydrate Metabolism.—Ferri irradiated infants and children with a quartz lamp. He found that moderate doses improve the carbohydrate metabolism, as evidenced by the glycemic curve after administration of carbohydrates or injection of epinephrine. Large doses of rays impair the regulatory mechanism.

Measuring Body Surface.—Frontali made direct measurements of the body surface with Bordier's integrator. The results differed considerably from du Bois' and still more from Vieroyndt's figures based on weight and length.

Surveillance After Intubation.—Thambusti protects the thread to which the tube is attached against biting by wrapping the exposed part in a strip (12 cm. long and 3 cm. wide) of adhesive plaster.

Revista de Medicina y Cirugía de la Habana, Havana

32: 233-296 (April 25) 1927

*Lesions of the Optic Nerve and Pituitary Tumors. H. Ferrer y Diaz.—p. 233.
*Rabies in Cuba. M. R. Casabó.—p. 252.
Miliary Tuberculosis in Childhood. T. Valledor.—p. 266.

Lesions of the Optic Nerve Caused by Pituitary Tumors.—Ferrer describes seven cases in which optic atrophy was due to pressure on the chiasm by pituitary growths. The patients were women. The cases are all comparatively recent, being included among Ferrer's last 4,300 patients. They represent 1.64 in 1,000.

Rabies in Cuba.—In Cuba and specially Havana, rabies has increased enormously, according to Ruiz, in the last few years.

Deutsches Archiv für klinische Medizin, Leipzig

155: 1-128 (April) 1927

Gas Metabolism in Thyrotoxicoses. P. Jaguttis.—p. 1.
*Sugar Tolerance After Insulin. P. Müller.—p. 26.
Histamine Injection and Urinary Pepsin in Achylia. H. J. Teschendorf.—p. 43.
Liver Extracts in Hypertension. E. Möller.—p. 52.
Atypical Pneumonias Resulting in Chronic Pneumonia. K. Goette.—p. 71.
Case of Arrhythmia. A. Pierach.—p. 92.
Genesis of Pylephlebitis. H. Wurm.—p. 97.
The Second Heart Sound. M. Hochrein.—p. 104.
"Insulin in Healthy Subjects." W. Fornet.—p. 122.
Reply. F. Zinsser.—p. 123.
Additional Note on Atypical Pneumonia. Goette and Hook.—p. 125.

Sugar Tolerance After Insulin.—Müller concludes that the results of insulin treatment as regards tolerance are similar to those of strict diets and that it does not occasion as much hardship.

Deutsche medizinische Wochenschrift, Berlin

53: 735-780 (April 29) 1927

*Organic Sequelae of Concussion of the Brain. H. Krisch.—p. 735.
Allergic Phenomena in Rheumatic Diseases. H. Strauss.—p. 737.
Infectious Rheumatism. S. Gräff.—p. 738. C'cn.
*Tumor Formation by Distant Action of Tubercle Bacillus. H. Guillery.—p. 740.
The Roentgenologic Representation. F. M. Groedel.—p. 741.
Protein Treatment in Ophthalmology. K. Steindorff.—p. 744.
Treatment of Blepharitis. Groenouw.—p. 745.
*Nonoperative Treatment of Strabismus. G. Abelsdorff.—p. 746.
Unilateral Internal Ophthalmoplegia. G. Abelsdorff.—p. 747.
Practical Neurology. E. Siemerling.—p. 747.
Disinfection of Bile. R. Kaewel and R. Kühn.—p. 750.
"Synthalin" Treatment of Outpatients. Von Falkenhausen.—p. 752.
Roentgenography of Interlobar Pleura. W. Crecelius.—p. 753.
Deep Roentgen-Ray Treatment in Gynecology. K. Herold.—p. 753.
Denatured Alcohol as Beverage and Cause of Death. H. Pander.—p. 756.
Need of Decentralization in Roentgenology. O. David.—p. 758.
Instruction in Roentgenology and Electro-Physical Medicine in France. Karplus.—p. 759.
Medical Impressions from Iceland. I. Kroner and K. Kroner.—p. 760.

Organic Sequelae of Concussion of the Brain.—Krisch finds that the disturbances of patients of this kind are frequently underestimated, just as it is common grossly to overestimate the damage in compensation hysteria. Loss of consciousness—especially with vomiting—is an important item in the history. Sometimes the loss is only partial or late and difficult to establish. Vasomotor phenomena, forgetfulness, oversensitiveness to sensory stimuli, as well as to alcohol and nicotine, are common symptoms.

Tumor Formation by Distant Action of Tubercle Bacillus.—Guillery induced sympathetic ophthalmia in a rabbit's eye by introducing into the other eye a small amount of living tubercle bacilli enclosed in a reed sac. When he used larger amounts of tubercle bacilli, large tumors of tuberculoid structure developed, although the bacilli apparently did not penetrate the sac.

Nonoperative Treatment of Strabismus.—Abelsdorff deals only with concomitant strabismus. If a child over 1 year of age shows convergent squinting, the parents are apt to make one of two mistakes: either they insist on a premature surgical intervention or they decide to wait for spontaneous recovery. Three fourths of these cases are due to hypermetropy which entails increased strain on accommodation. The latter is associated with the convergent movement. If there is no amblyopia, the anomaly of refraction should be corrected by eye-glasses. Unfortunately, the squint returns if the child stops wearing them. With unilateral amblyopia, the weaker eye should be trained by occluding the healthy eye and, if necessary, by instilling daily one drop of a 1 per cent solution of atropine. Considerable improvement may be obtained in children between the ages of 3 and 5 years. After this, the ability to unite the pictures obtained by both eyes (fusion) should be trained by an apparatus constructed on the principle of a stereoscope. Convergent strabismus should not be operated on before the growth of the child is complete. Divergent strabismus develops between the tenth and twelfth years. More than one half of these patients are myopic and some may be improved by proper eye-glasses. The others should be operated on. There is no danger of subsequent overcorrection in the latter case.

Klinische Wochenschrift, Berlin

6: 673-720 (April 9) 1927

Physiology of the Secretion of Urine. R. Höber.—p. 673.
*Toxic Dermatoses and Eosinophilia in Scarlet Fever. E. Nathan.—p. 676.
Gallbladder Reflexes and Duodenal Tubage. K. Trommer and E. Hempel.—p. 678.
*Inhibition of Estrus by Thallium. A. Buschke et al.—p. 683.
*Origin of the Syphilitic Blood Change. F. Klopstock.—p. 685.
Diagnosis of Syphilis in Pregnancy. E. Philipp et al.—p. 689.
*Pathogenesis of Progressive Muscular Dystrophy. K. Kuré.—p. 691.
Hunger and Spastic Tendency in Migraine. O. Muck.—p. 693.
Unilateral Stiffening of the Spine. R. Ehrmann and H. Taterka.—p. 694.
Blood Calcium in Hypnosis. M. Kretschmer and R. Krüger.—p. 695.
Microdetermination of Levulose. S. van Creveld.—p. 697.
"Intravenous Injections in Guinea-Pigs." J. Fortner.—p. 698.
*Production of Chicken Sarcoma. H. Laser.—p. 698.
Metabolism of Diphtheria Bacilli. H. Braun and K. Hofmeier.—p. 699.
Innervation of the Stomach in Parkinsonism. L. Hess and J. Faltitschek.—p. 699.
Traumatic Ossifying Myositis. M. Strauss.—p. 699.
Cancer of the Stomach. L. Frank.—p. 700.
*Sympathetic Innervation of Nonvegetative Organs. E. T. Brücke.—p. 703.

Toxic Dermatoses and Eosinophilia in Scarlet Fever.—Nathan observed leukopenia in purely toxic erythemas—for instance after neosilverarsphenamine. When the toxic agent produced a dermatitis, a neutrophilic leukocytosis with a considerable eosinophilia developed. He points to the analogy of such cases to scarlet fever and believes that the eosinophilia is conditioned by the inflammation of the skin. He believes

that there is, on the other hand, a relative parallelism between the leukopenia in pure toxic erythemas and in measles.

Inhibition of Estrus by Thallium.—Buschke, Zondek and Berman were able to inhibit the estrual cycle in mice by oral administration of thallium.

Origin of the Syphilitic Blood Change.—Klopstock regards the theory of antibodies induced by a combination of organ lipoids with the proteins of spirochetes as superfluous. He obtained rapid and striking production of Wassermann reagins by injecting killed spirochetes. Alcoholic extracts of spirochetes are a good antigen for the reaction, but are not sufficient to induce formation of antibodies.

Pathogenesis of Progressive Muscular Dystrophy.—Kuré concludes from his experiments and from histologic investigations that this dystrophy is due to a disturbance of the autonomic innervation of the muscles.

Production of Chicken Sarcoma.—Laser cultivated the spleen of a chicken embryo (18 days old) in the plasma of an animal that was injected intravenously with tar. Inoculation of the third passage (seven days) of this culture caused the growth of a transplantable sarcoma with metastases.

Sympathetic Innervation of Nonvegetative Organs.—Brücke surveys the results of investigations by Orbeli and his collaborators. He regards them as evidence of vegetative innervation of striated muscles, analogous to the autonomic innervation of the heart.

6: 721-768 (April 16) 1927

Lister's Centenary. V. Schmieden.—p. 721.
The Nerves of the Capillaries. A. Krogh.—p. 722.
Intravenous Anesthesia with Barbital Derivatives. R. Bumm.—p. 725.
*Parathyroid Hormone and Blood Clotting. L. M. Zimmermann.—p. 726.
*p_H of Pus and Secretions. C. Häbler.—p. 730.
Pseudogonorrheal Monarthritis. G. Axhausen.—p. 732.
*Synthalin in Surgical Complications. W. Nissel and E. Wiesen.—p. 734.
Temporary Clamping of Renal Stem. A. Hübner.—p. 736.
Healing of Fractures. M. Zondek.—p. 737.
*Lasègue's Phenomenon in Sciatica. O. Wiedhopf.—p. 739.
*Postoperative Thrombosis. K. Boshamer.—p. 740.
*Primary Resection of the Stomach. E. Kreuter.—p. 742.
Serum Proteins After Roentgen Irradiation. K. Breitländer and C. H. Lasch.—p. 743.
Action of Yohimbin. S. Loewe et al.—p. 743.
Treatment of Hearts Containing Bullets. R. Syller.—p. 744.
Age Statistics of Germany. K. Freudenberg.—p. 748.
Survey of Immunity. H. Cohn.—p. 751.
Protrusion of Renal Region in Pyelitis. M. Landsberg.—p. 766.
Isacen in Gynecology. A. Hirschberg.—p. 767.

Parathyroid Hormone and Blood Clotting.—Zimmermann did not see that injections of parathyroid hormone had any influence on the coagulation time in healthy subjects and animals or in cases of jaundice. He is skeptical as to the therapeutic value of calcium in such conditions.

p_H of Pus and Secretions.—Häbler confirms the parallelism between the inflammation and the hydrogen ion concentration of the pus. A pus with a p_H above 6.8 is not found in the acute stage of an inflammation.

Synthalin in Surgical Complications of Diabetes.—Nissel and Wiesen report good results, especially in a patient who was refractory to insulin.

Lasègue's Phenomenon in Sciatica.—Wiedhopf refuses to accept Lindstedt's theory of the myalgic nature of sciatica. He concludes that in the large majority of cases the roots of the sciatic nerve are affected.

Postoperative Thromboses.—Boshamer found that the amount of antithrombin in the blood is frequently lessened after surgical interventions made under local or ether anesthesia. This causes a relative predominance of thrombin and predisposes to thrombosis.

Primary Resection of the Stomach.—Kreuter finds that primary resection of perforated ulcers of the stomach or duodenum is not more dangerous than palliative interventions.

Medizinische Klinik, Berlin

23: 501-538 (April 8) 1927

Diagnosis and Treatment of Influenza. C. Klieneberger.—p. 501.
Colitis. E. Körner and M. Schaefer.—p. 502.
*Hypersensitiveness. J. W. Samson.—p. 506.
Roentgen-Ray Diagnosis of Gastritis. K. Gutzeit.—p. 507.
Dietotherapy on a Functional Basis. A. von Soós.—p. 507.
Psychotherapy. M. Serog.—p. 509. C'en.
Rectal and Vaginal Examination. G. H. Schneider.—p. 513.
Carbon Dioxide Baths in Hypertension. F. Turan.—p. 515.
Biologic Reactions of the Skin of the Hog. A. Haim.—p. 517.
Clamp for Diathermy Electrodes. E. Last.—p. 520.
Roentgen-Ray Treatment of Acute Inflammations. O. Seemann.—p. 521.

Hypersensitiveness.—Samson's patient had suffered repeatedly from hay-fever but had never had asthma. She developed a typical asthmatic attack a few minutes after intracutaneous injection of a pollen extract.

23: 539-582 (April 15) 1927

Results of Surgery of Peptic Ulcers. Finsterer.—p. 539. C'td.
*Blunders in Roentgen-Ray Diagnosis on Bones. R. Kienböck.—p. 542.
Pluriglandular Insufficiency. Borchardt.—p. 547.
Dupuytren's Contracture and Injury. A. Schubert.—p. 549.
*Sequels of Necrosis of the Pancreas. W. Sebening.—p. 551.
*Insulin Treatment of Vomiting of Pregnancy. E. Sachs.—p. 556.
*Sterilization of Gravid Animals with Insulin. E. Vogt.—p. 557.
Action of Synthalin and Insulin. F. Peiser.—p. 563.
Sarcoma and Injury. Brandis.—p. 564.
Orthopedics in Paralyses. S. Peltesohn.—p. 566.
Sunshine and Influenza. J. Ruhemann.—p. 580.

Blunders in Roentgen-Ray Diagnosis on Bones.—Kienböck discusses the manifold possibilities of blunders in roentgen-ray diagnosis of diseases of bones and mentions a few striking examples from reputable institutions.

Sequels of Necrosis of the Pancreas.—Sebening investigated the fate of twenty-one patients who recovered from necrosis of the pancreas after surgical intervention at the clinic in Frankfort (about 50 per cent mortality). The recovery appears to be permanent. Disturbances of the internal and external secretion were only transitory.

Insulin Treatment of Vomiting of Pregnancy.—Sachs advises small, slowly increasing doses of insulin in treatment of vomiting of pregnancy. He does not add carbohydrates, because he believes that the appetite produced by a slight hypoglycemia is an important therapeutic factor.

Sterilization of Gravid Animals by Insulin.—Vogt injected large doses of insulin (50 to 100 units daily, divided into three doses) in female rabbits. The animals became sterile after two weeks and refused the male completely after four weeks of injections.

Münchener medizinische Wochenschrift, Munich

74: 659-706 (April 22) 1927

Rickets. M. Pfaundler.—p. 659. C'td.
*Allergen-Free Chambers in Treatment of Pulmonary Tuberculosis. W. Storm van Leeuwen and W. Kremer.—p. 662.
*Treatment of Tetany in Adults. H. Dennig.—p. 666.
Pernicious Anemia. G. Denecke and A. Bingel.—p. 669.
*Action of Liquid Petrolatum on the Intestine. E. Schlagintweit.—p. 671.
*Fat-Soluble Vitamins and Habitual Abortion. E. Poulsson.—p. 674.
*Dangers of Malaria Treatment of Syphilis. H. Schottmüller.—p. 675.
Fibrous Pericarditis. W. Koennecke.—p. 675.
*Scintillating Scotoma. F. Penzoldt.—p. 677.
Treatment of Psoriasis. K. Herxheimer.—p. 678.
Curative Factors of High Altitudes. O. David.—p. 679.
*Glycolysis in Insulin Poisoning. F. Fischler.—p. 680.
Electrocardiography in Compression of the Carotid. O. Holtmeier.—p. 682.
Familial Occurrence of Leukemia. Brügger.—p. 683.
A Physician's Thoughts on Medicine. A. Bier.—p. 684.

Allergen-Free Rooms in Treatment of Pulmonary Tuberculosis.—Storm van Leeuwen and Kremer treated sixteen tuberculous patients in rooms containing cleaned air—such as they use in treatment of asthma. They report considerable improvement in some of the patients.

Treatment of Tetany.—Dennig had good results in treatment of tetany in adults with calcium or ammonium chloride. The daily doses were as large as 15 Gm. The treatment did not influence urticaria nor asthma. Only epilepsy was mitigated. Ultraviolet rays gave no results in tetany in adults.

Action of Liquid Petrolatum on the Intestine.—Schlagintweit found that liquid petrolatum changes into a fine emulsion in the intestine. It does not cover the scybala—therefore the conception of a lubricant is not correct—but it softens the stool and increases its water content.

Fat-Soluble Vitamins and Habitual Abortion.—Poulsson's apparently healthy patient had a normal delivery after a

series of spontaneous abortions. He attributes the favorable result to administration of cod liver oil during pregnancy.

Few Dangers from Malaria Treatment of Syphilis.—Schottmüller concludes that with very few exceptions, the treatment is not dangerous to the patient. Even syphilitic aortitis is not a contraindication. The danger to the community is nil.

Scintillating Scotoma.—Penzoldt, who is himself suffering from such attacks, recommends four doses of 0.25 Gm. of quinine hydrochloride daily for two weeks, or for about four weeks, if two is not sufficient.

Glycolysis in Insulin Poisoning.—In the distillate from blood and muscles of animals poisoned with insulin, Fischler found a substance which is changed into iodoform by compound solution of iodine and potassium hydroxide. This substance is probably methylglyoxal, although he does not exclude as yet the possibility that it may be acetone or pyruvic acid. Muscles from animals killed with insulin remain irritable for a long time. Such fibrillary contractions may be produced in normal muscles by direct application of glyoxal. Furthermore, he found that methylglyoxal kills immediately an animal poisoned with insulin, but that hydroxyacetone counteracts both this action of methylglyoxal and the insulin poisoning. He concludes that insulin poisoning is due to the production of methylglyoxal from dextrose.

Wiener klinische Wochenschrift, Vienna

40: 545-576 (April 28) 1927

*Skin Diseases from Insufficient Menstruation. B. Aschner.—p. 545.
Allergic Diseases. F. Vollbracht.—p. 549.
Action of Polyvalent Colon Bacillus Vaccine. K. von Knorr and L. Németh.—p. 554.
Treatment of Pulmonary Hemorrhages. O. Lichtwitz.—p. 555.
Myomas of the Intestine. A. Plenk.—p. 556.
"Limits of Roentgen-Ray Diagnosis." G. Holzknecht.—p. 559.
*Injections of Hypertonic Dextrose Solution in Disturbances of the Circulation. N. Jagić and R. Klima.—p. 561.
Protracted Intravenous Injection. W. Schey.—p. 561.
Causes of Backache in Women. F. Kermauner.—p. 562.
Cardiac Asthma. R. Singer.—p. 562.
Traumatic Diseases of the Spinal Cord. H. Steindl. Supplement.—pp. 1-18.

Skin Diseases as Sequelae of Insufficient Menstruation.—Aschner reiterates his opinion that menstruation is an important excretory phenomenon. When it is delayed or insufficient, as was the case in about 10 per cent of his patients, numerous disturbances follow. He deals here with the inflammatory tendency of the skin under these conditions. Venesection, saline purgatives and emmenagogues brought about improvement in most of his cases.

Injections of Hypertonic Dextrose Solution in Disturbances of the Circulation.—Jagić and Klima inject intravenously 20 cc. or more of a 40 per cent solution of dextrose, preferably after a small venesection. The injection must be given slowly in order to avoid thrombosis. They had good results in pulmonary edema, cardiac asthma, decompensation of the heart and angina pectoris.

Zeitschrift für Geburtshülfe und Gynäk., Stuttgart

90: 487-733 (Jan. 14) 1927

The Place of Hematopathia Gravidarum Among Anemias. G. Heinrich.—p. 487.
Improvement of Stroganoff's Treatment of Eclampsia. S. Katsuya.—p. 502.
*Physiologic Anemia of Pregnancy. P. Kühnel.—p. 511.
Proliferation of Dystopic Uterine Mucosa in the Ovary. L. Ballin.—p. 542.
*Fetal Respiratory Movements. W. Schmitt.—p. 559.
*Cyclic Changes as a Sex Characteristic of the Woman. H. Sellheim.—p. 575.
Face Presentations. G. Raschhofer.—p. 583.
Histologically Benign Uterine Scrapings in Cases with Clinical Symptoms. K. Kaufmann and W. Hoeck.—p. 594.
*Scarlet Fever in the Puerperium. W. Pösch.—p. 609.
*Studies of Cell Nuclei in Placenta, Hydatid Mole and Syncytioma Malignum. I. Y. Iwanow.—p. 631.
Congenital Cystic Lymphangioma of the Neck. T. Steinforth.—p. 637.
Adenomyosis Interna. E. von Burg.—p. 642.
Experiences with the Alexander-Adams Operation. O. Wiemann.—p. 649.
Duplication of the Female Urethra Complicated by Gonorrhea. W. Reiprich and M. Schössler.—p. 663.
Diverticulum of a Persisting Vitelline Duct with Perforation into the Amniotic Cavity. A. Gamper.—p. 669.

Physiologic Anemia of Pregnancy.—Kühnel made frequently repeated examinations of the blood volume, number of erythrocytes and hemoglobin in fifteen pregnant women. A physiologic anemia of pregnancy was confirmed. A fall in all three values began some time after the fifth week. The lowest point was reached between the sixteenth and twenty-second week and this level was maintained until between the thirtieth and thirty-second week, when a moderate rise set in, which reached its greatest height at about the thirty-fourth week. The examinations were continued after parturition and showed that the mother's blood required, as a rule, six months to return to normal. For this reason he recommends dietetic and medical treatment aimed at anemia in all cases in which conception has taken place within six months after parturition.

Intra-Uterine Respiratory Movements.—Schmitt maintains that the oxygen exchange of the fetus is regulated by variations in the tonus of the placental vessels, not, as Walz thinks, by respiratory movements on the part of the fetus.

Cyclic Evolution and Involution as a Female Characteristic in the Human Species.—Sellheim maintains that the cyclic changes in the woman's organism represent the regular and complete type of evolution; that they are, in a sense, a continuation of the working of the basic biogenetic law.

Scarlet Fever in the Puerperium.—On the basis of six cases of scarlet fever in puerperal women during an epidemic of the disease, Pösch discusses the relations between scarlet fever and puerperal sepsis, and the differential diagnosis between the two. Puerperal women appear to be particularly liable to contract the infection, which in most cases enters through the genital wounds.

Studies of Cell Nuclei in Placenta, Hydatid Mole and Syncytioma Malignum.—From examination of more than 700 sections, Iwanow concludes that, in the shape of the nuclei of its cells, chorionic epithelium of the normal placenta does not differ from hydatid mole or syncytioma malignum. Differences in size are ascribable to the influence of change of environment, cell nutrition, etc. An anaplastic transformation of the chorionic epithelium was not confirmed.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

54: 1-316 (Jan. 25) 1927

*Meat Intoxication with Eck's Fistula. P. György and K. Kleinschmidt.—p. 1.
*Encephalitis with Eck's Fistula. K. Kleinschmidt.—p. 20.
*Experiments with London's Angiostomy. P. György and K. Kleinschmidt.—p. 23.
Experiments on Isolated Ovaries. M. P. Nikolaeff.—p. 32.
Blood Pressure in Old Age. E. Baráth.—p. 58.
Variability of Blood Pressure. E. Baráth.—p. 64.
Blood Pressure Regulation After Exertion. E. Baráth.—p. 68.
Psychoreaction of Blood Pressure. E. Baráth.—p. 72.
*Gastric Secretion and Coffee. A. Bickel and C. van Eweyk.—p. 75.
Carbon-Nitrogen Ratio and Mineral Waters. A. Bickel et al.—p. 87.
Action of Iodine on the Heart. H. Guggenheimer and I. L. Fisher.—p. 114.
Iodine Content of the Blood. B. Wottschall.—p. 123.
*Minerals of the Blood and Urine After Pancreatectomy. Meyer-Bisch and D. Bock.—p. 131.
*Sodium, Chlorine and Hydration of Organs After Pancreatectomy. Meyer-Bisch and D. Bock.—p. 145.
Mechanism of Vomiting. W. Weitz and W. Vollers.—p. 152.
*Action of Opium on Movements of Stomach and Intestine. W. Weitz and W. Vollers.—p. 161.
Rhythmic Contraction of Tunica Dartos. B. Weicker.—p. 169.
Action of Insulin on Atropinized Pupil. G. Jorns.—p. 179.
Female Sex Hormones. S. Loewe and F. Lange.—p. 188.
Action of Insulin on the Blood. A. A. Schmidt and R. L. Ssaatschian.—p. 199.
Experiments with Colloidal Silver. J. Voigt.—p. 219.
*The Epidermis and Insensible Perspiration. O. Moog.—p. 226.
Liver Function Tests with Dyes. K. Paschkis.—p. 237.
Functional Diagnosis of the Reticulo-Endothelial Apparatus. L. J. Wilensky.—p. 257.
Action of Calcium on Secretion and Motility of the Stomach. M. Seregby and T. von Gyurkovich.—p. 271.
Action of Colloidal Silver. H. Bohn.—p. 277.
Pharmacology of Chlorophyll. T. Gordonoff.—p. 294.
Action of Ergotamine on the Liver. L. Loeffler.—p. 313.

Meat Intoxication with Eck's Fistula.—György and Kleinschmidt developed an advantageous method of making Eck fistulas. Exclusive meat diet caused typical poisoning in

all their dogs. They confirm the shifting of the blood reaction further to the alkaline side and the increased alkali reserve and lactic acid content during the intoxication. An acidosis occurs only in the agonal stage. Mineral acids, sugar and milk may cure the meat poisoning. The authors point to resemblances to tetany.

Encephalitis with Eck's Fistula.—Unlike Hoff and Silverstein, Kleinschmidt did not observe encephalitis in his Eck fistula dogs that died from meat poisoning.

Experiments with London's Angiostomy.—György and Kleinschmidt modified slightly London's method, which consists in affixing permanent cannulas to blood vessels, which may be punctured at will through the cannula. The alkali reserve and the p_H of the blood from an hepatic vein are higher than those of blood from the portal vein. Both samples—especially the portal—were more alkaline during digestion of meat. An injection of insulin caused acidosis in the portal and hepatic blood. After the injection the blood sugar in the peripheral and portal blood was lower than in the hepatic vein. If sugar is administered during this period, its concentration rises a little in the hepatic vein, but is lower than in the portal vein.

Gastric **Secretion and Coffee.**—Bickel and van Eweyk found that the stimulating action of coffee on gastric secretion was due to the products of roasting—probably chiefly to histamine. Caffeine had no action in the amounts used.

Metabolism of Minerals After Pancreatectomy.—Meyer-Bisch and Bock investigated the mineral metabolism of pancreatectomized dogs. The blood chlorides were decreased in twenty-seven out of twenty-eight cases. In eleven out of fifteen dogs the decrease was parallel, although not proportional to the decrease in sodium. In all the animals the potassium-calcium ratio was increased. The alkali reserve was diminished in thirteen out of fourteen dogs. The pancreatectomy was followed immediately by a hypochloruria lasting for several days and independent of ammonia excretion. The elimination of nitrogen was increased in all the animals. The chlorine content increased in the muscles and decreased in the skin and liver. The hydration capacity of the muscles (three out of four samples) was increased, that of the liver (two cases) was decreased.

Action of Opium on the Movements of the Stomach and Intestine.—Weitz and Vollers found that opium, after a short period of inhibition of peristalsis, causes irritation of the stomach and increased intestinal tonus. This action and the increased pendulum movements of the intestine favor resorption of fluids and may partly account for the constipating action of opium.

The Epidermis and Insensible Perspiration.—Moog concludes that insensible perspiration is, at least in part, a direct function of the cells of the epidermis.

Zeitschrift für Kreislaufforschung, Dresden

19: 265-312 (April) 1927

Nature of Extrasystoles. C. J. Rothberger.—p. 265.

19: 313-344 (May 1) 1927

Injuries to Healthy Heart Valves. A. Adam.—p. 313.

Zentralblatt für Chirurgie, Leipzig

54: 577-640 (March 5) 1927

Muscle Transplantation in Paralysis of the Serratus. G. Riedel.—p. 578.
Ectopia Testis Perinealis. C. Bayer.—p. 581.
Retropharyngeal Fibrosarcoma. B. S. Tartakowsky.—p. 583.
*Treatment of Cysts of the Pancreas. O. Hahn.—p. 585.
Secondary Hemorrhages After Gastro-Enterostomy. J. Jungbluth.—p. 588.
Antirheumatic Medicines in Traumatic Stiffening of Joints. V. Hoffmann.—p. 590.
*Hypophysin-Sodium Chloride Injection in Treatment of Postoperative Intestinal Paralysis. A. Krinsky and E. C. Stein.—p. 591.
Description of a Rubber Inlay for Shoes. W. Herhold.—p. 592.

Treatment of Pancreatic Cysts.—Hahn reports a case in which Henle established anastomosis between a recurrent pancreatic cyst and a loop of small intestine. The resultant cure is of four years' standing.

Postoperative Intestinal Paralysis Treated by Injection of a Sodium Chloride-Pituitary Solution.—This treatment, recommended by Vogt, was conspicuously successful in the case of an elderly patient, in bad general condition, in whom numerous other remedies had proved useless. Spontaneous defecation took place after 450 cc. of the solution had been injected intravenously. The solution contained 4 cc. of the pituitary preparation to 500 Gm. of physiologic solution.

Zentralblatt für Gynäkologie, Leipzig

51: 449-512 (Feb. 19) 1927

*The Child's Chin as a Guide in Labor. C. J. Gauss.—p. 449.
*The Water Content of the Vagina. H. Bültemann.—p. 458.
Suppuration in Myomas. E. Klaften.—p. 474.
Meroacrania and Encephalocystocele. O. Herschan and B. Beuthner.—p. 480.
Maternal Mortality from Eclampsia. A. Hochenbichler.—p. 486.
Cessation of Bleeding in Third Stage of Labor. J. Wieloch.—p. 493.
Hyperplasia Deciduae Tuberosa at Term. L. Szamek.—p. 496.
Puerperal Gangrene of the Lower Extremities. A. Bartels and A. Estrin.—p. 502.
*Skull Trauma During Birth. W. Cohen.—p. 505.
Prolonged Retention of Foreign Body in the Uterus. W. A. Ssemkowsky.—p. 511.

The Child's Chin as a Guide in Labor.—Gauss describes his method of diagnosing the presentation and progress of the fetus by palpation of the chin. The method should be studied on the illustrations and diagrams that illustrate the text.

The Water Content of the Vaginal Secretion.—Bültemann found that the weight in milligrams of the water contained in the vaginal discharge, under various pathologic and physiologic conditions, paralleled the amount of the discharge. On the other hand, the percental water content of the vagina, i. e., the weight of the water compared with the weight of the total secretion, did not stand in any recognizable relation to the amount of the discharge or to the absolute water content of the vagina. The further the vaginal flora differed from the physiologic, the greater was the water content of the secretion.

Birth Injury to the Skull.—In the case here reported, the mother was a primigravida with rachitic contraction of the pelvis of the second degree. The uterine contractions were unusually strong. The fetal heart tones were irregular for several hours while the head was still mobile and before rupture of the membranes. When the os was found to be completely dilated, the membranes were ruptured artificially. After an hour and a half, the heart tones improved and three hours later the birth took place spontaneously. After about fourteen hours the child became cyanotic, spasms set in and thirty-four hours after birth death took place. At first glance the brain appeared normal, but more careful examination revealed injuries, which were confirmed under the microscope. Cohen recommends forceps delivery, with extensive vaginoperineal incision, if necessary, for all cases of contracted pelvis. This should take place as soon as the head has overcome the disproportion, in order to save the already injured child from further violence.

Zentralblatt für innere Medizin, Leipzig

48: 418-456 (April 23) 1927

Physical Condition of Circulating Proteins. W. Starlinger.—p. 418.
"Essential Hypertension." E. Kylin.—p. 431.
Reply. W. Hülse.—p. 436.
Partial Reply. M. Klingmüller.—p. 439.
Test Diuresis and Diuretics. S. Litzner.—p. 443.

Klinicheskaya Meditsina, Moscow

5: 141-211 (Feb.) 1927

Rôle of Mineral Springs in Treatment of Diabetes. D. D. Pletneff.—p. 141.
Cornelius' Method in Treatment of Muscle Diseases. V. S. Marsova.—p. 161.
*Value of Carbohydrate Test in Various Diseases. F. R. Borodulin and E. I. Grigul.—p. 165.
Origin of Inorganic Systolic Murmurs. N. N. Savitskiy.—p. 177.
The Structure of Neurofibromas. A. Zlatoveroff.—p. 187.
Syphilis and Surgery. M. A. Agronik.—p. 191.

Causes of Misleading Results in Alimentary Hyperglycemia Test.—In Borodulin and Grigul's opinion, the value of this test in hepatic diseases is overestimated. In case of insufficient retention of the blood sugar in the muscles, there may be alimentary hyperglycemia even when the liver functions

normally. In case of reduced absorption in the gastrointestinal tract, the amount of sugar carried to the liver is small. Thus the sugar may be retained wholly in the liver, even when the glycogenic function of the organ is impaired. The condition of the vegetative and endocrine systems are other factors interfering with the results of the test. Hence, the carbohydrate test does not reveal the glycogenic function of the liver; it points to the glucose balance in the organism. The test is more important in detection of a latent diabetes and in diagnosis of malignant tumors.

Russkaya Klinika, Moscow

7: 157-314 (Feb.) 1927. Partial Index

Malignant Tumors of the Heart. S. M. Savelzon.—p. 176.
Prognosis of Scarlet Fever Complications. P. S. Galtsoff.—p. 225.
*Cases of Broncho-Biliary and Pleuro-Biliary Fistula. A. G. Smitten.—p. 252.

Cases of Broncho-Biliary and Pleuro-Biliary Fistula.—Smitten reports two cases of gallstones ending in perforation of the diaphragm and consequent appearance of the bile in the pleura in one instance, in the bronchi in the other. Incision of the thorax is the only rational treatment. In case of abscess or echinococcosis of the liver, the operation should be a radical one. In gallstone disease, it should be preliminary to operation on the gallbladder. Early intervention for biliary calculi may avert such a complication. The author found only seventy-one similar cases in the medical literature.

Acta Medica Scandinavica, Stockholm

66: 197-293 (April 30) 1927

*Calcium Metabolism in Diabetes. E. Kylin.—p. 197.
*Potassium and Calcium Content of the Blood and the Epinephrine Reaction. A. Brems.—p. 207.
Acute Spontaneous Porphyria. E. Melkersson.—p. 227.
Serotherapy of Scarlet Fever. V. Bie et al.—p. 238.
Vital Staining of Blood Cells. A. Nyfeldt.—p. 272.
Megalocyte or Macrocyte. A. Nyfeldt.—p. 286.
Roentgen-Ray Cancer Cured by Surgical Diathermy. H. Bordier.—p. 291.
*Calcium and Potassium Content of the Blood. E. Kylin. Supplement.—pp. 1-112.

Calcium Metabolism in Diabetes.—Kylin found an average of 12.1 mg. of calcium (as oxide) per hundred cubic centimeters of blood in diabetic patients, as against 11.1 in healthy subjects. Injection of insulin lowers the blood calcium content and increases the calcium elimination by the urine. The urinary concentration following injection of 1 Gm. of calcium chloride is lower in diabetes than in health, in asthma it is higher. The total amount excreted in an hour is about the same in all three conditions.

Potassium and Calcium Content of the Blood and the Epinephrine Reaction.—Brems found no definite relation between the potassium-calcium ratio of the serum and the type of blood pressure reaction to epinephrine injection. He confirms the pressor action of a preliminary injection of calcium chloride. Subcutaneous injection of epinephrine is followed by irregular variations of the two ions in the serum. He emphasizes the necessity for rapid separation of the serum for determination of potassium. Otherwise, incorrect high figures result, due to diffusion of potassium from the erythrocytes.

Calcium and Potassium Content of the Blood.—Kylin publishes the results of his examination of 400 subjects.

Hygiea, Stockholm

89: 321-352 (April 30) 1927

Leonardo Bianchi. S. E. Henschen.—p. 321.
*The Hypoglycemic Symptom-Complex in the Insulin Treatment of Children. C. W. Herlitz.—p. 329.
Cancer. L. Wolff.—p. 335.
*Mare's Milk Injections Against Whooping Cough. E. Tretow.—p. 343.

Hypoglycemic Symptom-Complex in the Insulin Treatment of Children.—Herlitz reports two cases of an overdose of insulin in children. In a child, 8 years old, a stage of exaggerated cheerfulness and animation was followed by one of mania with marked restlessness. In this stage the blood-sugar was 0.064 mg. per hundred cubic centimeters. Not till the rise in blood sugar was very distinct, or till after about 15 minutes, was he hungry. In a boy 5 years old the only symptom of a hyoglycemia of 0.045 mg. per hundred cubic centimeters was severe vomiting. The lowest percentage of sugar observed was 0.022 mg. per hundred cubic centimeters. Herlitz has not noticed any distinct therapeutic effect when epinephrine has been used in serious cases of hypoglycemia.

Mare's Milk Injections Against Whooping Cough.—Tretow has treated many cases of whooping cough with injections of mare's milk with very good results. The reaction of mare's milk is always alkaline, that of cow's milk varies. The percentage of sugar in mare's milk is 6.65, as against 4.88 in cow's milk; the percentage of albumin, 1.89, as against 3.55. The low percentage of albumin makes it less probable that the effect of the injections is due exclusively to this constituent of the milk. Fermented mare's milk taken by mouth has an unmistakably curative influence on acute tracheitis, while kefir, which is the corresponding cow's milk preparation, does not have this effect.

Ugeskrift for Læger, Copenhagen

89: 293-312 (April 14) 1927

*Case of Criminal Abortion with Paralytic Ileus. C. Clemmesen.—p. 293.
*An Epidemic of Parotitis. S. Rohleder.—p. 294.
*Experimental Anemia of Pregnancy. A. Nyfeldt.—p. 296.
The Ordinary Anemias and Our Iron Preparations. Becker.—p. 297.
*A Case of "Larva Migrans." I. Hansen.—p. 298.
The Hygiene Organization of the League of Nations. J. Kuhn.—p. 300.

Case of Criminal Abortion with Paralytic Ileus.—A woman was sent to the hospital under the diagnosis of abortion with sepsis. The temperature was 39 C., the pulse 116. A curettage of the uterus was performed, at which placental tissue and a small fetus were removed. After the operation, symptoms of paralytic ileus developed. She died eight days after admission. The day before she died she admitted having taken every morning for four or five days 5 Gm. of aspirin and, distributed over two days, 3 Gm. of acetanilid, 3 Gm. of antipyrin, 3 Gm. of phenacetin and 1 Gm. of caffein. At necropsy the abdominal cavity was found coated with fine fibrous material. The mucous membrane of the stomach and duodenum was eroded. The medicines she had taken explain the facies morbi but not the paralytic ileus. Although the patient denied attempting to produce abortion, it is thought that she had done so, with resultant sepsis, on which followed peritonitis and paralytic ileus.

Observations on an Epidemic of Mumps in the Faroe Islands.—The epidemic was started by a sailor from a foreign fishing boat. It appeared to be spread directly from person to person and only by intimate contact. Rohleder treated 131 cases; seventy-four were bilateral, fifty-three unilateral. In three cases both the parotid and submaxillary glands were involved; in one case only the submaxillary.

Experimental Anemia of Pregnancy.—In his experiments on rabbits, Nyfeldt worked on the hypothesis that anemia of pregnancy is due to increased production of hemolysin in the placenta. When the production of hemolysin exceeds the normal limit, there develops a hemolytic anemia, which may become pernicious anemia. Experimentally he induced anemia by reducing the resistance to anemia by decreasing the number of chromocytes. The resultant blood picture resembled that of anemia of pregnancy: there was aniso-micro-megalocytosis with some normoblasts and megaloblasts. The leukocytosis did not present any special feature aside from a neutrophilic character in the beginning of the experiment; the lymphocytosis typical of bacterial endotoxin anemia was entirely absent. He succeeded in developing this hypochromatic anemia in two out of thirteen animals experimented on. The others died of toxicosis.

A Case of "Larva Migrans."—Hansen describes a case of "larva migrans" ("creeping eruption") in a Siamese married woman, aged 23. The first symptom was itching over a small area under and on the back of the left internal malleolus. Gradually, as the disease advanced, the skin became brownish and the pigmentation spread several centimeters a day. The disease is caused by the burrowing under the skin of the minute "larva" of a species of gastrophilus. It is seen in Denmark, England, Russia, Japan and Senegal. It is treated by excision of the "larva," which may be very difficult, by injection of parasiticide remedies around the infected area, by application of iodine or by freezing with ethyl chloride.